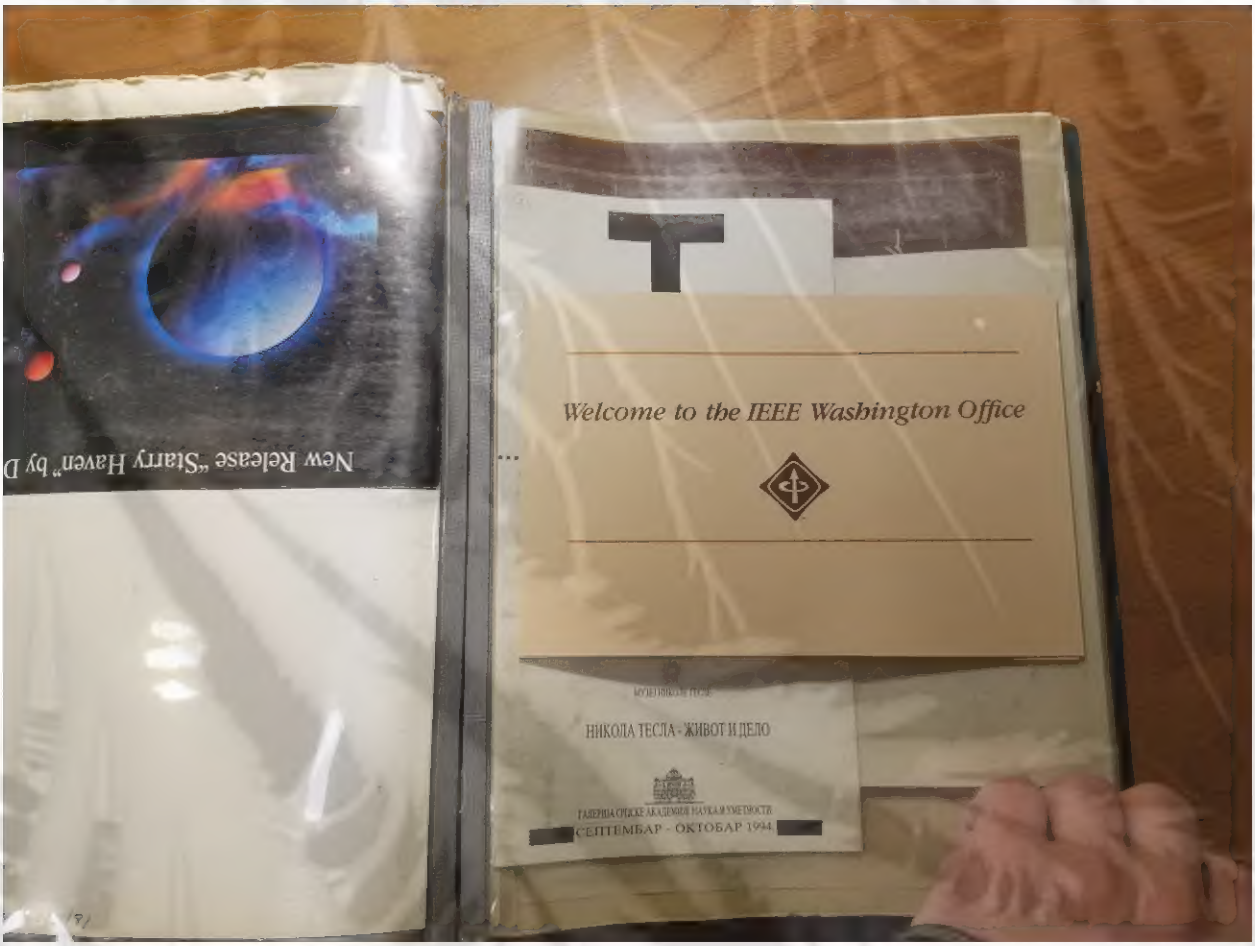
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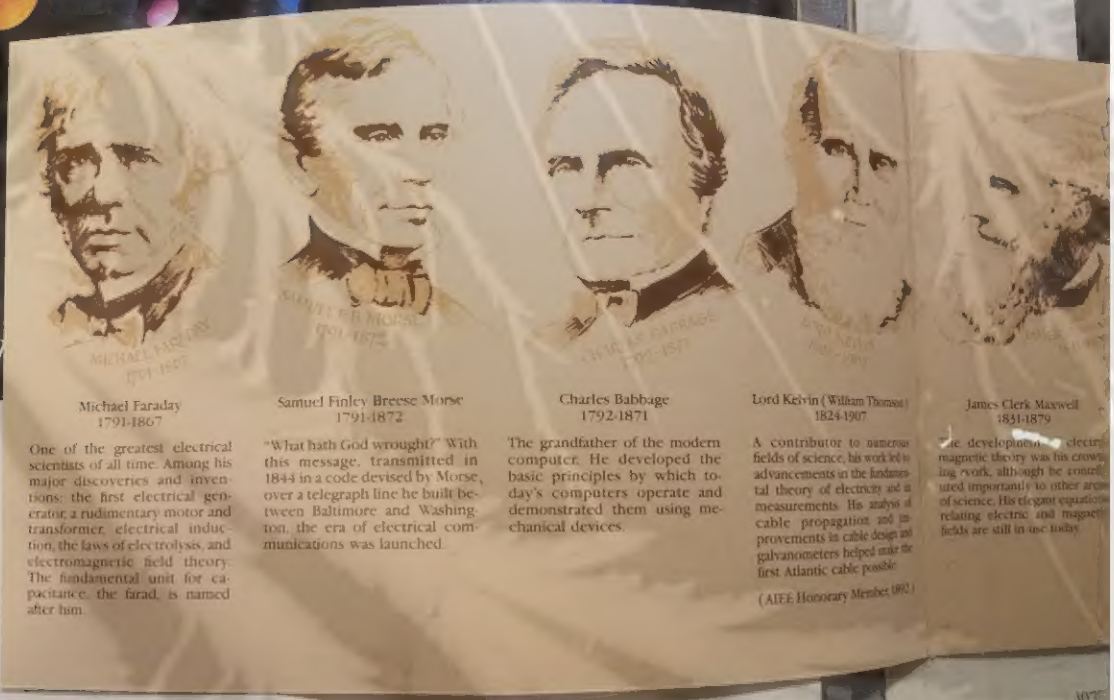
НИКОЛА ТЕСЛА - ЖИВОТ И ДЕЛО
СЕПТЕМБАР - ОКТОБАР 1994



Michael Faraday
1791-1867

One of the greatest electrical scientists of all time. Among his major discoveries and inventions: the first electrical generator, a rudimentary motor and transformer, electrical induction, the laws of electrolysis, and electromagnetic field theory. The fundamental unit for capacitance, the farad, is named after him.

Samuel Finley Breese Morse
1791-1872

"What hath God wrought?" With this message, transmitted in 1844 in a code devised by Morse, over a telegraph line he built between Baltimore and Washington, the era of electrical communications was launched.

Charles Babbage
1792-1871

The grandfather of the modern computer. He developed the basic principles by which today's computers operate and demonstrated them using mechanical devices.

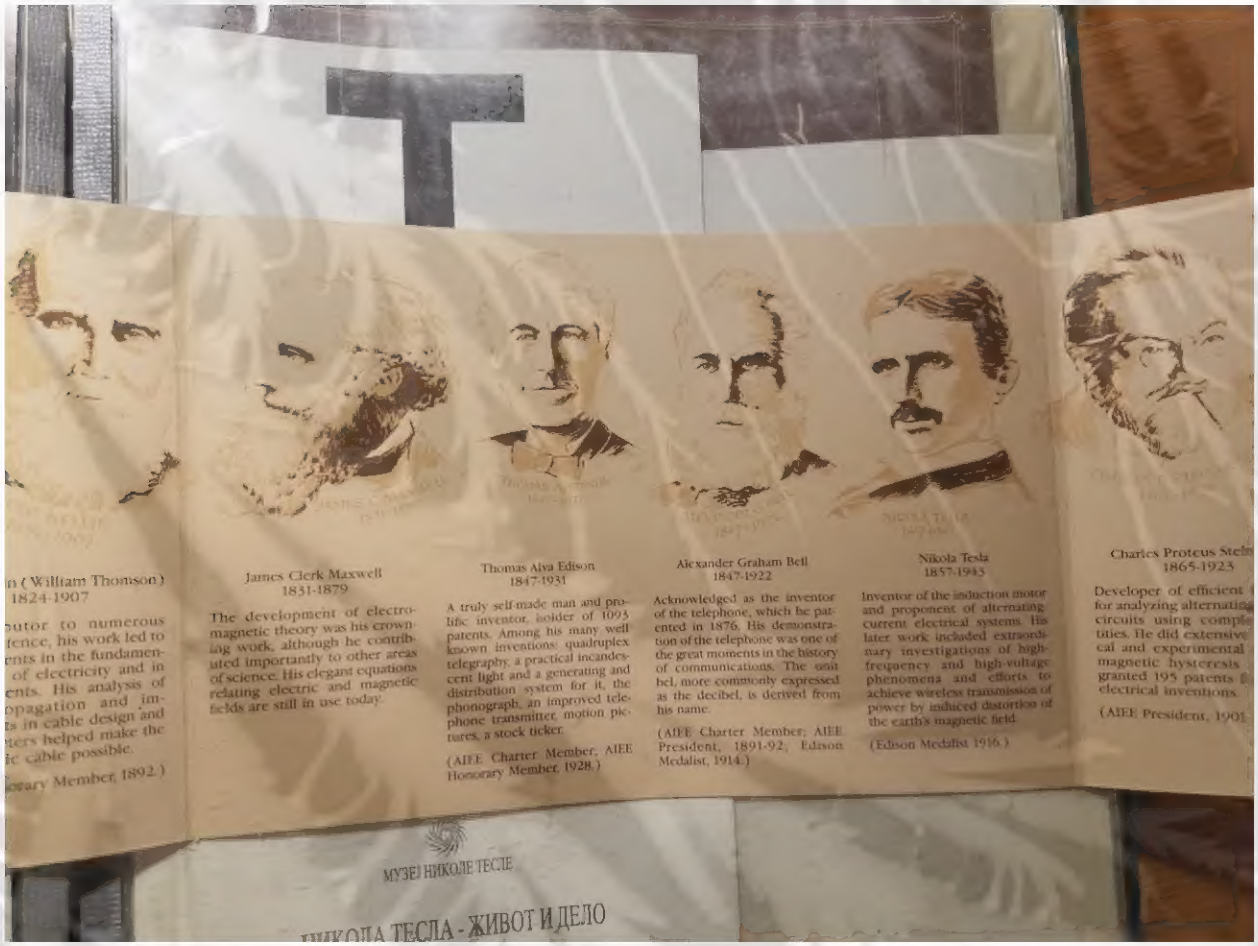
Lord Kelvin (William Thomson)
1824-1907

A contributor to numerous fields of science, his work led to advancements in the fundamental theory of electricity and in measurements. His analysis of cable propagation and improvements in cable design and galvanometers helped make the first Atlantic cable possible.

(AIEE Honorary Member 1892)

James Clerk Maxwell
1831-1879

The development of electromagnetic theory was his crowning work, although he contributed importantly to other areas of science. His elegant equations relating electric and magnetic fields are still in use today.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of science. His elegant equations
relating electric and magnetic
fields are still in use today.
Thomas Alva Edison
1847-1931
A truly self-made man and pro-
lific inventor, holder of 1093
patents. Among his many well
known inventions: quadruplex
telegraphy, a practical incandes-
cent light and a generating and
distribution system for it, the
phonograph, an improved tele-
phone transmitter, motion pic-
tures, a stock ticker.
(AIEE Charter Member, AIEE
Honorary Member, 1928.)
Alexander Graham Bell
1847-1922
Acknowledged as the inventor
of the telephone, which he pat-
ented in 1876. His demonstra-
tion of the telephone was one of
the great moments in the history
of communications. The unit
bel, more commonly expressed
as the decibel, is derived from
his name.
(AIEE Charter Member; AIEE
President, 1891-92; Edison
Medalist, 1914.)
Nikola Tesla
1857-1943
Inventor of the induction motor
and proponent of alternating
current electrical systems. His
later work included extraordi-
nary investigations of high-
frequency and high-voltage
phenomena and efforts to
achieve wireless transmission of
power by induced distortion of
the earth's magnetic field.
(Edison Medalist 1916.)
Charles Proteus Ste
1865-1923
Developer of efficient
for analyzing alternating
circuits using compl
tities. He did extensive
cal and experimental
magnetic hysteresis
granted 195 patents
electrical inventions.
(AIEE President, 1901
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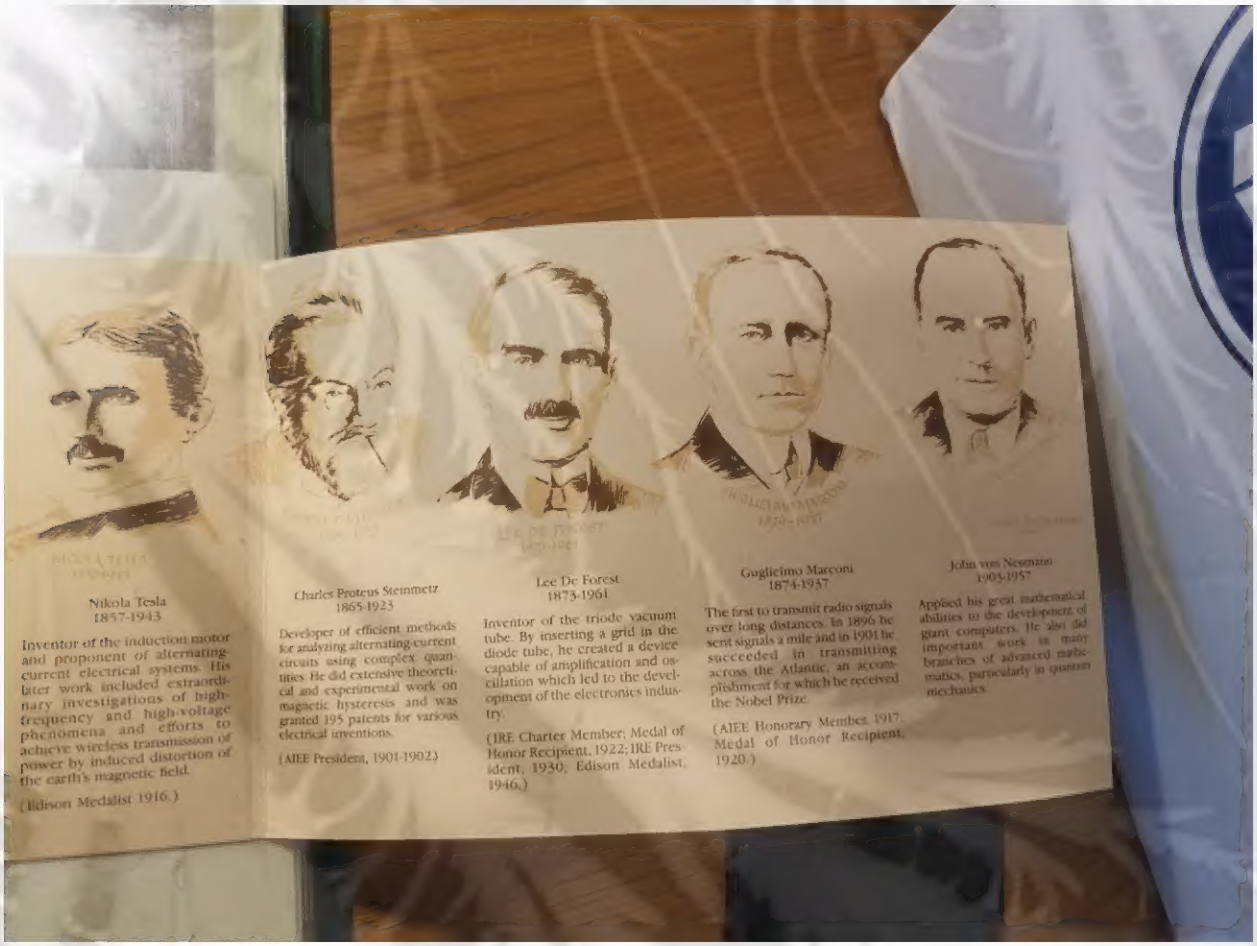
НИКОЛА ТЕСЛА - ЖИВОТ И ДЕЛО



Nikola Tesla
1857-1943

Inventor of the induction motor and proponent of alternating-current electrical systems. His latter work included extraordinary investigations of high-frequency and high-voltage phenomena and efforts to achieve wireless transmission of power by induced distortion of the earth's magnetic field.

(Edison Medalist 1916.)

Charles Proteus Steinmetz
1865-1923

Developer of efficient methods for analyzing alternating-current circuits using complex quantities. He did extensive theoretical and experimental work on magnetic hysteresis and was granted 195 patents for various electrical inventions.

(AIEE President, 1901-1902.)

Lee De Forest
1873-1961

Inventor of the triode vacuum tube. By inserting a grid in the diode tube, he created a device capable of amplification and oscillation which led to the development of the electronics industry.

(IRE Charter Member; Medal of Honor Recipient, 1922; IRE President, 1930; Edison Medalist, 1946.)

Guglielmo Marconi
1874-1937

The first to transmit radio signals over long distances. In 1896 he sent signals a mile and in 1901 he succeeded in transmitting across the Atlantic, an accomplishment for which he received the Nobel Prize.

(AIEE Honorary Member, 1917; Medal of Honor Recipient, 1920.)

John von Neumann
1903-1957

Applied his great mathematical abilities to the development of giant computers. He also did important work in many branches of advanced mathematics, particularly in quantum mechanics.

СРПСКА АКАДЕМИЈА
НАУКА И УМЕТНОСТИ

•

МУЗЕЈ НАУКЕ И ТЕХНИКЕ

•

МУЗЕЈ НИКОЛЕ ТЕСЛЕ

•

ГРАДСКИ МУЗЕЈ СУБОТИЦА

ИМАЈУ ЧАСТ ДА ВАС ПОЗОВУ
НА ОТВАРАЊЕ

ИЗЛОЖБЕ

НИКОЛА ТЕСЛА - ЖИВОТ И ДЕЛО

У среду, 22. марта у 12 сати

Изложбени простор Музеја
(Градска кућа 1 спрат)

Генерални спонзор:
ЕПС Електровојводина
ЕД "Суботица"

SRPSKA AKADEMIJA
NAUKA I UMETNOSTI

•

MUZEJ NAUKE I TEHNIKE

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MUZEJ NIKOLE TESLE

•

GRADSKI MUZEJ SUBOTICA

IMAJU ČAST DA VAS POZOVU
NA OTVARANJE

IZLOŽBE

NIKOLA TESLA - ŽIVOT I DELO

U sredu, 22. marta u 12 sati

Izložbeni prostor Muzeja
(Gradska kuća I sprat)

Generalni sponzor:
EPS Elektrovojvodina
ED "Subotica"

Nikola Tesla


Nikola Tesla

Tesla je prijavio 40 patenata iz oblasti polifaznih sistema. 1888. g. drži svoje prvo predavanje „Novi sistem motora i transformatora naizmenične struje" pred Američkim Institutom elektrotehničkih inženjera.
Iste godine Džordž Vestinghaus, industrijalac, otkupljuje pravo na korišćenje Teslinih patenata i počinje sa proizvodnjom motora. Pronalazak polifaznog sistema došao je do punog izražaja pri podizanju hidrocentrale na vodopadima Nijagare. Izgradnja je trajala od 1891 – 1896. g. kada su svi agregati pušteni u rad.

Devedestih godina prošlog veka Tesla počinje sa radom u oblasti visokofrekventnih struja. Tokom 1891. g. prijavljuje niz patenata iz oblasti proizvođenja struje visokih učestanosti i visokih napona. Iste godine podnosi patentnu prijavu za uređaj poznat pod nazivom „Teslin transformator". Razne varijante oscilatora pojavljuju se u Teslinim patentima sve do 1896.g. Rezultate svojih radova na području visokofrekventnih struja izložio je u predavanjima između 1891 i 1893.g. Od 1897.g. sledi niz patenata iz oblasti radiotehnike. 1898. g. konstruiše brod sa bežičnim upravljanjem.

Tesla je prijavio 40 patenata iz oblasti polifaznih sistema. 1888. g. drži svoje prvo predavanje „Novi sistem motora i transformatora naizmenične struje" pred Američkim Institutom elektrotehničkih inženjera.

Iste godine Džordž Vestinghaus, industrijalac, ot-

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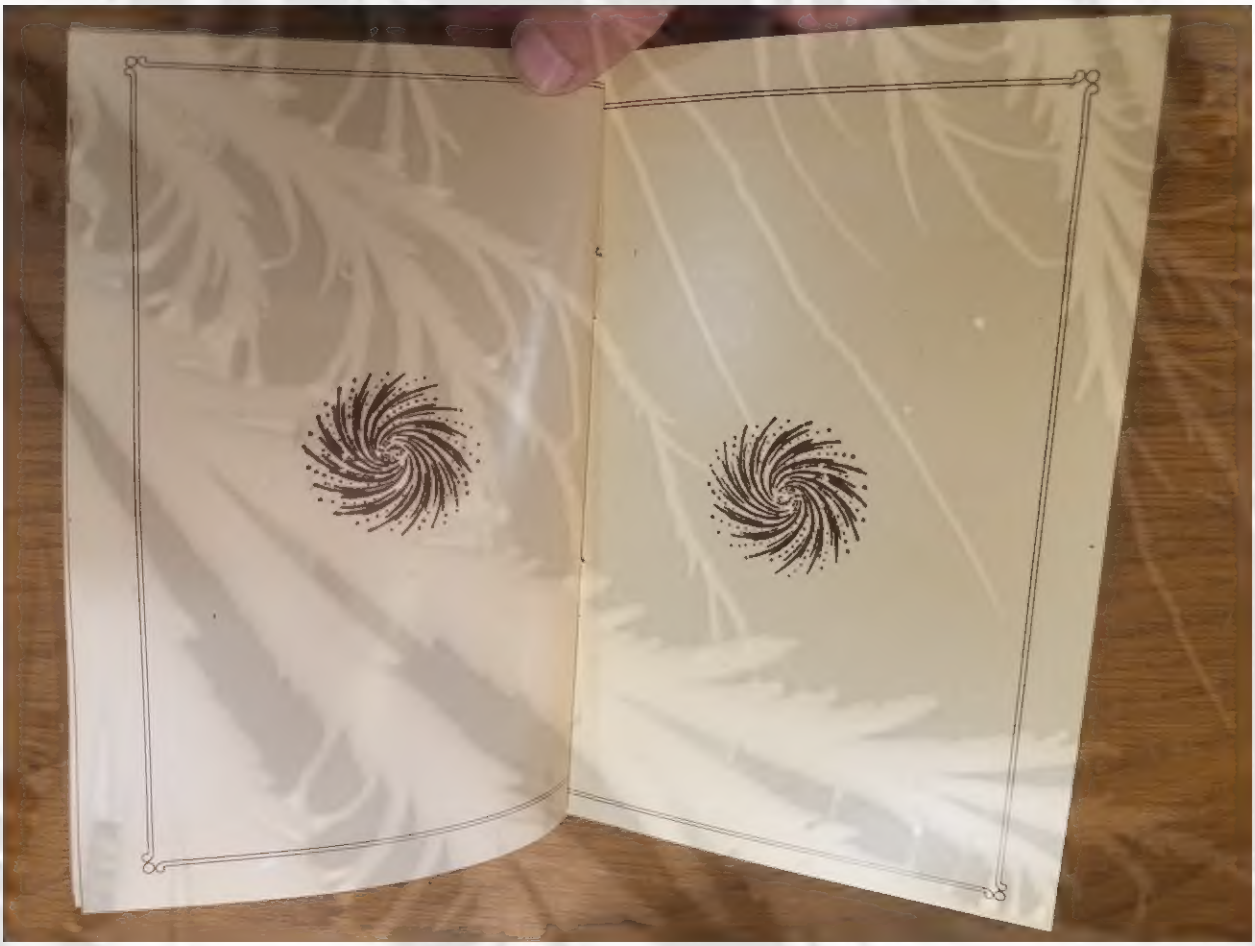


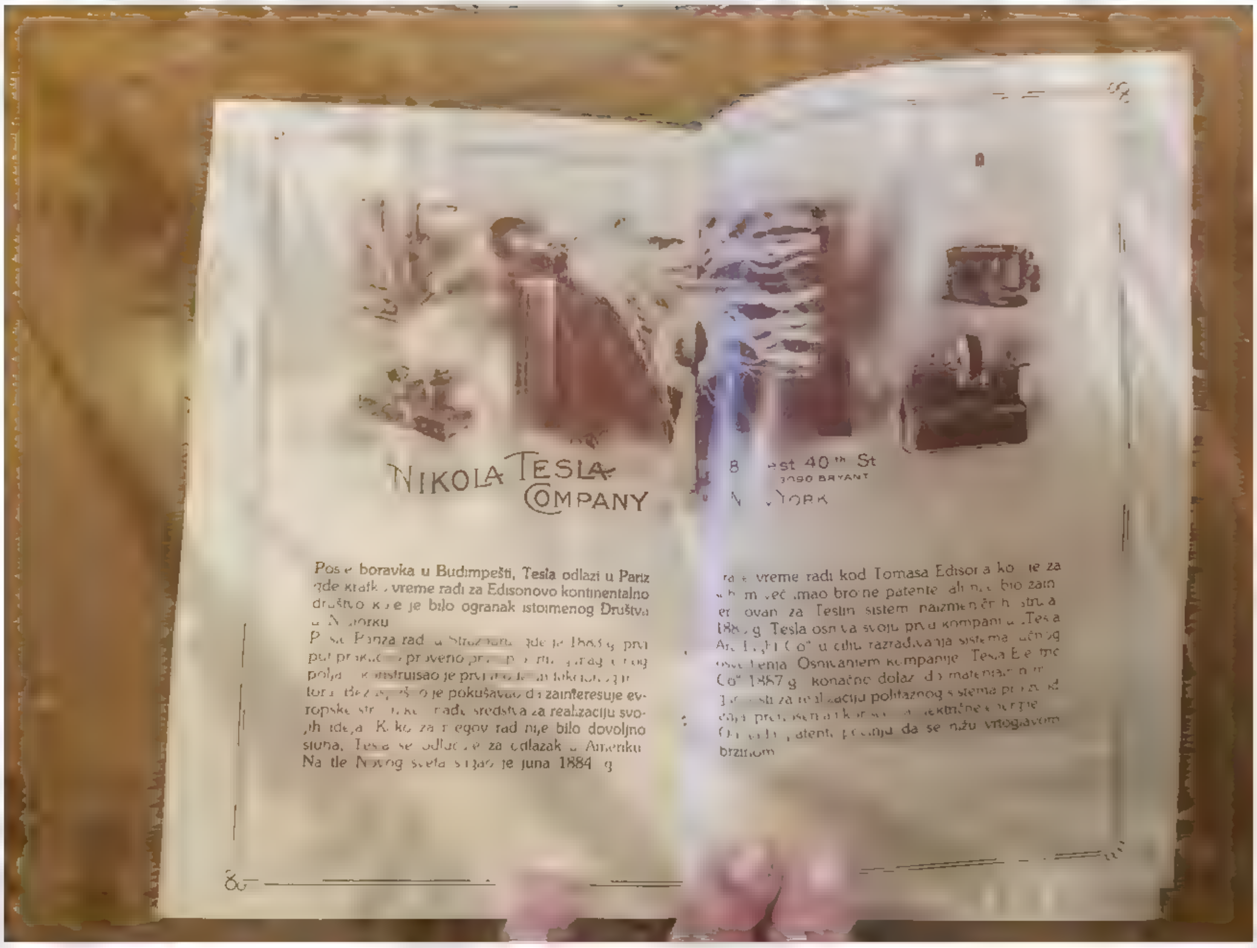
NIKOLA TESLA COMPANY

West 40th St
TEL 9090 BRYANT
NEW YORK

Tesla je dolazio u domovinu dva puta. Prvi put, bilo je to 1889. g., posle razgledanja Svetske izložbe u Parizu.

Početkom februara 1892 g., Tesla dolazi u Evropu i drži predavanja u Londonu i Parizu. Na poziv iz domovine zbog bolesti majke, otkazuje pozive za predavanja u drugim evropskim gradovima. Dolazi u Gospić, Posećuje Zagreb, gde govori o mogućnosti elektrifikacije pomoću sistema naizmenične struje. Preko Budimpešte stiže u Beograd u junu 1892 g., gde u zgradi Kneževog Mišinog zdanja drži predavanje o svojim pronalascima.

Tokom 1881 i 1882 godine Tesla boravi u Budimpešti gde radi u telefonskom društvu. Ovo zaposlenje daje mu velike mogućnosti da dokaže svoje pronalazačke sposobnosti. Usavršio je aparat za pojačanje glasa koji nikad nije patentirao ili objavio. Tu u Budimpešti potaknut Geteovim stihovima dolazi do genijalnog principa obrtnog magnetnog polja.



NIKOLA TESLA COMPANY

8 West 40th St
3090 BRYANT
NEW YORK

Posle boravka u Budimpešti, Tesla odlazi u Pariz gde kratko vreme radi za Edisonovo kontinentalno društvo koje je bilo ogranak istoimenog Društva u Njujorku.

Posle Pariza radi u Strazburu gde je 1883. g. prvi put praktično proverio princip obrtnog magnetnog polja i konstruisao je prvi [illegible] indukcionog motora. Bezuspešno je pokušavao da zainteresuje evropske stručnjake i nađe sredstva za realizaciju svojih ideja. Kako za njegov rad nije bilo dovoljno sluha, Tesla se odlučuje za odlazak u Ameriku. Na tle Novog sveta stigao je juna 1884. g.

Kratko vreme radi kod Tomasa Edisona koji je za sobom već imao brojne patente, ali nije bio zainteresovan za Teslin sistem naizmeničnih struja. 1886. g. Tesla osniva svoju prvu kompaniju „Tesla Arc Light Co" u cilju razrađivanja sistema lučnog osvetljenja. Osnivanjem kompanije „Tesla Electric Co" 1887. g. konačno dolazi do materijalnih sredstava za realizaciju polifaznog sistema [illegible] električne energije. Od tada patenti počinju da se nižu vrtoglavom brzinom.

NIKOLA TESLA COMPANY

8 West 40th St
TEL. 9390 BRYANT
NEW YORK

Tesla je prijavio 40 patenata iz oblasti polifaznih sistema 1888. g. drži svoje prvo predavanje „Novi sistem motora i transformatora naizmenične struje" pred Američkim Institutom elektrotehničkih inženjera.

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NIKOLA TESLA COMPANY

Da bi nesmetan [illegible] 1899 g. odlazi u Kolorado gde gradi ekspenmentalnu laboratoriju. Ekspenmentiše sa strujama visokih učestanosti i napo-nima od nekoliko miliona volti, ostvaruje bezži-telegrafiju na daljinu od preko 1000 km. Oduševljen novim otkrićima, 1901 g. podiže veliku „svetsku radiostanicu" na Long Islandu i radi na ostvarivanju ideje o povezivanju svetskih komunikacija u jedinstveni sistem. Započete radove nije dovršio usled nedostatka materijalnih sredstava.

Od 1905 g. Tesla podnosi patente iz oblasti turbina, pumpi, fluidike, gromobrana, merača protoka i brzine, prikos želi, da sa novim patentima obezbedi sredstva za nastavak radova na Long Islandu, ne uspeva i njegov život postaje sve teži. Poslednje patente daje u oblasti avijacije.

NIKOLA TESLA COMPANY

Za [illegible] Tesla [illegible] priznanja i pored [illegible] svog stava dobio je brojna priznanja naučnog sveta Edisonova i Džon Skotova medalja, počasni doktorat Univerziteta [illegible] Univerziteta [illegible] Kra[illegible] 1[illegible] stanovljena [illegible] stem[illegible] za magnet[illegible] Tesla [illegible]

[illegible] 40 [illegible]

[illegible] je rođen [illegible] 1856 [illegible] 1884 [illegible] studira[illegible] tehnic[illegible] 1886 [illegible] 1891 [illegible] Univerziteta [illegible] Prage

STANLEY WOLDER
Counsellor at Law

521 FIFTH AVENUE
NEW YORK 17, N. Y.
MURRAY HILL 7-3233

September 17, 1965

The Tesla Society
P. O. Box 4058
Minneapolis, Minnesota 55414

Att: Mr. Leland I. Anderson,
Secretary

Dear Mr. Anderson:

Thank you for your letter of September 7.

I first met Dr. Tesla in 1925 or 1926, when he was exhibiting at the I.R.E. Convention at the Kingsbridge Armory in New York City, and found him to be an unusually interesting individual.

I am enclosing your post card marked in accordance with your suggestion.

Sincerely yours,

SW:tnb
Encl.

The Tesla Society

P. O. Box 4058

Minneapolis, Minnesota 55414

Att: Mr. Leland I. Anderson,
Secretary.

At the close of 1889, having worked one year in the [illegible] of Tesla Laboratories, Pittsburgh, I experienced an great a reading for resuming my interrupted investigations [illegible], constituting a very tempting proposition by him. I [illegible] New York to take up my laboratory work. But owing to pressing demands by several foreign scientific societies I made a trip to Europe where I lectured before the Institution of Electrical Engineers and Royal Institution in London and the Societe de Physique in Paris. After this and a brief visit to my home in Yugoslavia I returned to this country in 1892 eager to devote myself to the subject of predilection of my thoughts: the study of the universe.

During the succeeding ten years of intense concentration I was fortunate enough to make two far-reaching discoveries. The first was a dynamic theory of gravity, which I have worked out in all details and hope to give to the world very soon. It explains the causes of this force and the motions of heavenly bodies under its influence so satisfactorily that it will put an end to idle speculations and false conceptions, as that of curved space. According to the relativists, space has a tendency to curvature owing to an inherent property of [illegible] of celestial bodies. Granting a semblance of reality to this fantastic idea, it is still self-contradictory. Every action is accompanied by an equivalent reaction and the effects of the latter are directly opposite to those of the former.

Supposing that the bodies act upon the surrounding space making curvatures of the same, it appears to my simple mind that the curved space must react on the bodies and, producing the opposite effects, straighten out the curves. Since action and reaction are consistent, it follows that the supposed curvature of space is entirely impossible. But even if it existed it would not explain the motions of the bodies as observed. Only the existence of a field of force can account for them and its assumption dispenses with space curvature. All literature on this subject is futile and destined to oblivion. So are also all attempts to explain the workings of the universe without recognizing the existence of the ether and the indispensable function it plays in the phenomena.

My second discovery was a physical truth of the greatest importance. As I have searched the scientific records in more than a half dozen languages for a long time without finding the least anticipation, I consider myself the original discoverer of this truth, which can be expressed by the statement: There is no energy in matter other than that received from the environment. On my 79th birthday I made a brief reference to it, but its meaning and significance have become clearer to me since then. It applies rigorously to molecules and atoms as well as to the largest heavenly bodies, and to all matter in the universe in any phase of its existence from its very formation to its ultimate disintegration.

Being perfectly satisfied that all energy in matter is [illegible] from the environment, it was quite natural that when radioactivity was discovered in 1896 I immediately started a search for the external agent which caused it. The existence of radioactivity was positive proof of the existence of external rays. I had previously investigated various terrestrial disturbances affecting wireless circuits but none of them or any others emanating from the earth could produce a steady sustained action and I was driven to the conclusion that the activating rays were of cosmic origin. This fact I emphasized in my papers on Roentgen rays and Radiations contributed to the Smithsonian Series of New York, in 1897. However, as radioactivity was observed equally well in other widely separated parts of the world, it was obvious that the rays must be impinging on the earth from all directions. Now, of all bodies in the Cosmos, our sun was most likely to furnish a clue as to their origin and character. Before the electron theory was advanced, I had established that radioactive rays consisted of particles of primary matter not further decomposable, and the first question to answer was whether the sun is charged to a sufficiently high potential to project such particles and produce the effects noted. This called for a prolonged investigation which culminated in my finding that the sun's potential was 216 billions of volts and that all such large and hot heavenly bodies emit cosmic rays. Through

further while research and observation of these rays has been pursued assiduously, and to deny it would be like denying the light and heat of the sun. Nevertheless, there are still some Anglists who prefer to attend the cosmic rays in deep ignorance. One of them declared recently that they come from very remote regions in which matter is converted into energy. I am sure that this is not true for there is no place where such a process occurs in this or any other universe beyond our ken.

A few words will be sufficient in support of this conclusion. The kinetic and potential energy of a body is the result of motion and determined by the product of its mass and the square of velocity. Let the mass be reduced, the energy is diminished in the same proportion. If it be reduced to zero the energy is likewise zero for any finite velocity. In other words, it is absolutely impossible to convert mass into energy. It would be different if there were forces in nature capable of imparting to a mass infinite velocity. Then the product of zero mass with the square of infinite velocity would represent infinite energy. But we know that there are no such forces and the idea that mass is convertible into energy is rank nonsense.

While the origin and character of the rays observed near the earth's surface are sufficiently well ascertained, the so-called cosmic rays observed at great altitudes remained

a riddle for more than 26 years, chiefly because it was found that they increased with altitude at a rapid rate. My investigations have brought out the astonishing fact that the effects at high altitudes are of an entirely different nature, being as reliable waves as cosmic rays. These are particles of matter projected from celestial bodies at very high temperature and carried in enormous electric potentials. The effects at great altitudes, on the other hand, are due to waves of extremely small length produced by the sun in a certain region of the atmosphere. This is the discovery which I wish to make known. The process involved in the generation of the waves is the following: The sun projects charged particles constituting an electric current which passes through a conducting stratum of the atmosphere approximately 10 kilometers thick enveloping the earth. That is a transmission of energy exactly as I illustrated in my experimental lectures in which one end of a wire is connected to an electric generator of high potential, its other end being free. In this case the generator is represented by the sun and the wire by the conducting air. The passage of the solar current involves the transference of electric charges from particle to particle with the speed of light, this resulting in the production of extremely short and

penetrating waves. As the air stratum mentioned is the source of the waves it follows that the so-called cosmic rays observed at great altitudes must increase as this stratum is approached. My researches and calculations have brought to light the following facts in this connection: (1) the intensity of the so-called cosmic rays must be greatest in the zenithal portion of the atmosphere; (2) the intensity should increase more and more rapidly up to an elevation of about 20 kilometers where the conducting air stratum begins; (3) from there on the intensity should fall, first slowly and then more rapidly, to an insignificant value at an altitude of about 30 kilometers; (4) the display of high potential must occur on the free end of the terrestrial wire, that is to say, on the side turned away from the sun. The current from the latter is supplied at a pressure of about 216 billion volts and there is a difference of 2 billion volts between the illuminated and the dark side of the globe. The energy of this current is so great that it readily accounts for the auroras and other phenomena observed in the atmosphere and at the earth's surface.

For the time being I must content myself with the announcement of the salient facts, but in due course I expect to be able to give more or less accurate technical

data relating to all particulars of this discovery.

To go to another subject, I have devoted much of my time during the year past to the perfecting of a new small and compact apparatus by which energy in continuous amounts can now be placed [illegible] points to any distance without the slightest dispersion. I had in mind to confer with my friend George E. Hale, the great astronomer and solar expert, regarding the possible use of this invention in connection with his own researches. In the meantime, however, I am expecting to put before the Institute of France an accurate description of the devices with data and calculations and claim the Pierre Guzman Prize of 100,000 francs for means of communication with other worlds, feeling perfectly sure that it will be awarded to me. The money, of course, is a trifling consideration, but for the great historical honor of being the first to achieve this miracle I would be almost willing to give my life.

My most important invention from a practical point of view is a new form of tube with apparatus for its operation. In 1896 I brought out a high potential targetless tube which I operated successfully with potentials up to 4 million volts from '96 to '98. This device was adopted by many imitators

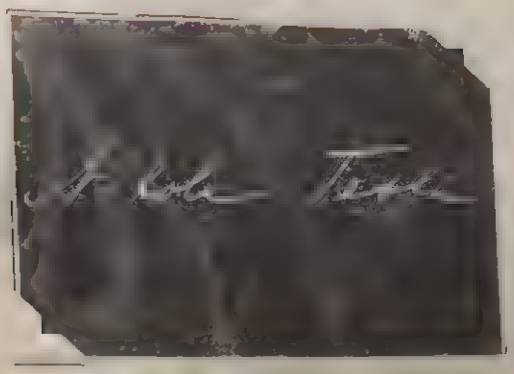
[illegible] slight modifications it is employed even now in all prominent laboratories and scientific institutions here and in a few countries, and virtually all steady investigations are carried on with it. At a later period I managed to produce very much higher potentials up to 15 million volts, but then I encountered insurmountable difficulties which compelled me that it was necessary to invent an entirely different form of tube in order to carry out successfully certain ideas I had conceived. This tube I found far more difficult than I had expected, not so much in the construction as in the operation of the tube. For many years I was baffled in my efforts, although I made a steady slow progress. Finally though, I was rewarded with complete success and I produced a tube which it will be hard to improve further. It is of ideal stability, and subject to wear and can be operated at any potential, however high, that may be produced. It will carry heavy currents, transform by means of energy within practical limits, and it permits very ready and regulation of the same. I expect that this invention, when it becomes known, will be universally adopted in preference to other forms of tubes, and that it will be the means of obtaining results undreamed of before. Among others, it will enable the production of these radium substitutes in any desired quantity and will be, in general, immensely more effective in the smashing of

[illegible] and the transmutation of matter. It is hopeful that it will be possible by its use to carry out a process in which [illegible] should be as aligned matter, but only life. However, this tube will not open up a way to utilize atomic or sub-atomic energy for power purposes. According to the physicist [illegible] Alexander there is no available energy in atomic structures, and even if there were any, the tube will always greatly exceed the output, preclude [illegible], practical use of the liberated energy.

Some papers have reported that I had promised to give a full description of my tube and its [illegible] on the present occasion. This has caused me considerable annoyance as, owing to some obligations I have undertaken regarding the application of the tube for important purposes, I am unable to make a complete disclosure now. But as soon as I am relieved of these obligations a technical description of the device and of all the apparatus will be given to scientific institutions.

There is one more discovery which I want to announce at this time, consisting of a new method and apparatus for the obtainment of vacua exceeding many times the highest heretofore realized. I think that as much as one-billionth of a micron can be attained. What may be accomplished by means of such vacua is a matter of conjecture, but it is obvious that they will make possible the production of much more intense

effects in electron tubes. My ideas regarding the electron are at variance with those generally entertained. I hold that it is a relatively large body carrying a surface charge and not an elementary unit. When such an electron leaves an electrode of extremely high potential and in very high vacuum, it carries an electrostatic charge many times greater than the normal. This may astonish some of those who think that the particle has the same charge in the tube and outside of it in the air. A beautiful and instructive experiment has been contrived by me showing that such is not the case, for as soon as the particle gets out into the atmosphere it becomes a blazing star owing to the escape of the excess charge. The great quantity of electricity stored on the particle is responsible for the difficulties encountered in the operation of certain tubes and the rapid deterioration of the same.



AUTOGRAPH MANUSCRIPTS
of
Nikola Tesla

Vol. II

THE GEORGE ELLERY HALE PAPERS - REEL 34

June 4, 1908

Dr. George Ellery Hale
Director of the Solar Observatory
of the Carregie Institution,
Mount Wilson, California

Dear Mr. Hale:

I learned with pleasure of your forthcoming book, The Study of Stellar Evolution, from which I expect to derive much needed information. I have greatly regretted that since our meeting at Chicago years ago, we have never been able to get again together. Your work interests me very much, and I am heartily in sympathy with you.

Please do not fail, the next time you come to New York, to call on me and give me an opportunity to exchange a few ideas with you.

Sincerely yours,

N. Tesla

June 15, 1908

Mr. Nikola Tesla
Long Island, New York

Dear Dr. Tesla:

Thank you very much for your letter of June 4th. I have often remembered with pleasure our discussions in New York, and hope to see you again in the near future. If you ever have time to come to California, be sure to pay us a visit here. Believe me, with sincere regards,

Yours very sincerely,

George Ellery Hale

(COPY) Attachment to Thomson + CRS 143

TESLA LABORATORY.

Long Island, N. Y., June 3, 1908.

R. W. Rice, Esq.,
General Electric Company,
Lynn, Mass.

My dear Mr. Rice:-

I am introducing a new invention of mine, and require in this connection direct current generators and motors as light as possible. Having had the opportunity of seeing some of your light weight machines at the New York Transportation Company, I have been struck with improvements you have made and recognize that it will be difficult to do better.

My invention has been tested dynometrically by myself and other engineers, but in the use I now contemplate, electric transmission and reading would be most suitable for my purpose. What I am most anxious about is to obtain a set of tabulated data in this matter, and it would further my purposes very much if I could obtain from you a generator capable of developing, say 80 HP. at speeds of from 800 to 1200 revolutions per minute, and two motors to run, preferably, from 1800 to 2000 revolutions per minute, which would be driven from the generator.

If the machines you have developed are on the market, we would buy them. If not, perhaps I might, through the influence of my technical friends and fellow-engineers on your staff, get this machinery for a certain term, to complete my tests, on any conditions that it would please your company to make. I shall frankly acknowledge your help in my presentation of the work to some Engineering Society, and can state with conviction that what I am doing cannot be but of interest to your Company.

I am writing a formal letter to the General Electric Company in this city, referring them to you, and would be obliged to you if you will do yourself what you can, and also refer this matter to Prof. Elihu Thomson and Dr. Steinmetz, for whose assistance I shall be much obliged. Anticipating the favor of an early reply, I remain

Sincerely yours,

(Signed) N. Tesla

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Sincerely yours,

(Signed) N. Tesla

June 10th, 1903.

Prof. Elihu Thomson,
Dr. C. P. Steinmetz.

I enclose herewith copy of letter received from Nikola Tesla. I do not know any more than is stated in his letter. I would be glad to have your views.

E. W. Rice, Jr.

700

Schenectady, N. Y., June 15th, 1908.

Dr. E. W. Rice, Jr.,

Building.

Dear Sir:-

Received your note of June 10th, enclosing copy of letter of Mr. Nikola Tesla. The letter appears to me characteristic of Tesla, that is, unintelligible. All I can make out is, that he wants some light generators and motors, but how light, and for what purpose, is not stated. As a formal letter has been addressed to the New York Office by Tesla, it might be best to have somebody of the New York Office see him and get more particulars, and then inform us. The only guess I can make is that Tesla is experimenting with aerial navigation.

I doubt however, whether it would be advisable for the General Electric Company to enter into any relation with Tesla: his actions and utterances for some years have been such, that I believe he has become seriously unbalanced mentally, and when loaning him apparatus or in any other way approaching the project, the liability exists, that in some of his irresponsible newspaper articles, Tesla may claim that the General Electric Company is backing his work, and this would hardly increase the Company's engineering standing.

Yours truly,

CPS-JHH-SV

C O P Y.

Tesla Laboratory.

Long Island, N. Y.

New York, June 24, 1904.

Edward W. Whitaker, Esq.,
Patent Attorney,
Washington, D. C.

My dear Sir:--

I regret very much that your communication containing the enclosed clippings has been overlooked. Permit me, at this late date, to thank you for the expression of your appreciation.

The efforts of Loomis in wireless telegraphy may have been the first in this country, but not abroad. The records show many anticipations in France and England.

The devices used until quite recently were, however, for all practical purposes, worthless. Neither Marconi or anybody else has succeeded in transmitting a message to any appreciable distance without the use of my apparatus. Last October the Hertzian appliances were abandoned and my apparatus substituted and the messages were, of course, easily transmitted. There is nothing particularly meritorious in the attempt, however, for I have already in 1899, as you may see from my patent of April 18, 1905, passed a heavy current around the earth (over 100 amperes) and excited the planet resonantly.

As a matter of fact, to transmit wireless messages, telegraphic or telephonic, under practical conditions and to appreciable distances, five of my discoveries are necessary:

First, my method of oscillatory conversion by means of condensers; second, the so-called "Tesla transformer"; third, my apparatus for the transmission of energy without wire, comprising grounded, resonant circuits; fourth, my methods and apparatus for individualizing signals, and, fifth, my discovery of the stationary waves.

Believe me,

Very truly yours,

N. Tesla.

See also Tesla's reference to article in the Electrician (London), Feb. 27, 1903, in the Electrical World article for Jan. 7, 1905, page 22.

C O P Y.

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Believe me,

Very truly yours,

N. Tesla.

SMITHSONIAN INSTITUTION
UNITED STATES NATIONAL MUSEUM
WASHINGTON 25, D. C.

July 14, 1958

Mr. Leland I. Anderson
1615 East River Terrace
Minneapolis 14, Minnesota

Dear Mr. Anderson:

Mr. King found this letter in our files on Tesla and thought you might be interested in adding it to your records, if you do not already have it.

Yours very truly,

Robert P. Multhauf
Head Curator
Department of
Science and Technology

Enclosure
Tesla Letter dated June 24, 1908

JOHN ESCH, 715 E. CIMARRON.

VINING

Cimarron Springs, Colo. [illegible] 18[illegible]

Mr. [illegible]

TO ESCH & VINING, DR

—CONTRACTORS...

...and BUILDERS

[illegible]	16 [illegible]
J. A. [illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Brass screws 25 glue 70 1 gro screws 2 2 10	1 35
1 gro 1 [illegible] 10 25 Brass screws 25 gro 3/4 7 25	[illegible]
2 gro [illegible] 50 screws 10 " pulleys 100 screws 10	1 70
[illegible] 25 bicycle [illegible] 220 25 [illegible] 125	[illegible]
Brads 15 screws 10 tacks 20	15 [illegible]

Paid [illegible]

4/16/95 [illegible]

E. C. WOODWARD,
Assayer and Chemist.
Telephone 315 26 E. Kiowa Street.

Colorado Springs, Colo., [illegible] 19[illegible]

Dear Sister Lena.

Your last letter just re'cd & I can't help but think I must seem dead to you for not answering your last two letters. Really I have thought of writing to you for some time past -- but since the mill has been closed I have tried to get something else to keep me busy but so far have found nothing except my efforts towards collecting what is due me from Mr. T. (Testa) So far he has paid me enough to have a balance due me of $828.59 & you certainly realize what that means to a man of my financial caliber.

I wish you would not speak of the good things you have to eat at home, for I have so wished I could come their this winter & share in the Celery Salad, roast goose, Sauer Kraut, & Sauce etc. that it made me almost famished when I read your letter in regard to these things.

The last letter I had from the Boys

was to the effect that they had made a small shipment of ore but I do not know how much they realized on it. Otto told me he would write me what it gave. When the mill closed here I had 23 days sallary due me, & from latest reports I am apt to get that sometime within the next 14 days. It's a fact that if I get what Mr. T. (TESLA) owes me I shall make a trip home & get fat, after that I believe I would venture to go to Ariz. & see the boys & thin. I don't know just what I would attempt. I met Mrs. Mitchell on the St. a few days ago & she spoke of you & wanted to know if I ever heard from you. I see Mr. Zehrun (?) quite often but have not met his wife. Since you left here. We are having delightful weather here at present & wish you could be here to go to MANITOU & other places of interest with me.while I am not working.

I have not written since

she was here. I certainly should have but it seems I'm not much of a letter writer after all. I went & registered the other day & if I vote it will be for the first time I have done so since I came to Colo. At to how I will vote is a question? One thing sure & that is I shall not place an X at the top of my ticket. The state issue is the most important in Colo. this year.

While I would like to see August get , I'm afraid he wont be able to carry enough Rep. votes. I see the Hon?? J. B. Howten (?) is on the ticket in place of Julius Barnett Driscoll (?). I would like to have a vote in -- W - on that account. I certainly would vote for him not (?), because he is so honest towards the person who has the most cash.

I am glad you enjoy the papers. I always aim to send all of them for the week, but sometimes some of them are

lost at my boarding place. I a-
glad to hear that Gerty is feeling better
& would love to drop in accidentally just
to see how she would act. You may tell
her for me that I will write her a
letter in the near future.

I hope to be able to write you better news
as to my working in the near future
& in the meantime let me hear from you
again. I enjoy your letters very much.
With best wishes to all & love to you,
Gerty & Mother. I am your Bro

Carl.

Goodby.

202 Metropolitan Tower,
December 29th, 1910.

My Dear Mr. Duffner;

I was glad to receive your greetings of the Season which would seem to indicate that you are a good fellow after all, although you have given me considerable trouble. I should have expected a man of your intelligence to have understood the situation.

Reciprocating in your good wishes,

I remain,

Yours very truly,

C. J. Duffner, Esq.,
Watertown, So. Dak.

RALPH J. HAWKINS
ATTORNEY AND COUNSELOR AT LAW
SYNDICATE BUILDING
PATCHOGUE, NEW YORK

June 18, 1907.

Nikola Tesla, Esq.,
The Waldorf Astoria, N. Y. C.

Dear Sir:-

On the 15th I received a letter from Mr. Schreff saying that you would resume the weekly payments on account of Eisemann.

If you wish to resume your weekly payments, I think you should pay at least ten dollars a week. Of course I do not know when you will stop paying, and I shall not consent to this unless you will pay ten dollars a week.

Yours very truly,

Ralph J. Hawkins

RJH/E

DEFFNER INSISTS THAT TESLA PAY HIS DEBTS

[illegible] FOR $[illegible].22 WILL BE [illegible] THIS WEEK.

[illegible] LIKELY [illegible] LEGAL [illegible] WILL BE SOLD

[illegible]

INSISTS THAT
A PAY HIS DEBTS

$899.22 WILL BE
LED THIS W

LY ELECTRICAL IN-
NTS WILL BE SOLD.

As a Rule They Are Now Well Rewarded for Their Work

The inventor of fifty or sixty
was more often out at the el
well paid. But George E. W
ers for

The modern shipping tag the
safety pin, the rubber
and eye with a

s hundreds of thousands of

So much for the inventors whose names are rarely heard among the thousands who use their inventions. But the great inventors of modern times have most of them become millionaires.

Sampson Hayward A Harvey the

Mr. Washburn

TESLA'S WON
ADVER

Nikola
Wirel
Pou

TESLA'S WONDER TOWER HAS BEEN ADVERTISED FOR SALE BY SHERIFF

New York, June 13.—Because [illegible] a theory of [illegible]

Vikola Tesla Invents Wireless System of Power Transmission

New [illegible] Tesla, inventor [illegible] broke his [illegible] of [illegible] By this [illegible] system [illegible] earth [illegible] speak, by anyone having the proper electrical

TESLA'S WONDER TOWER HAS BEEN ADVERTISED FOR SALE BY SHERIFF

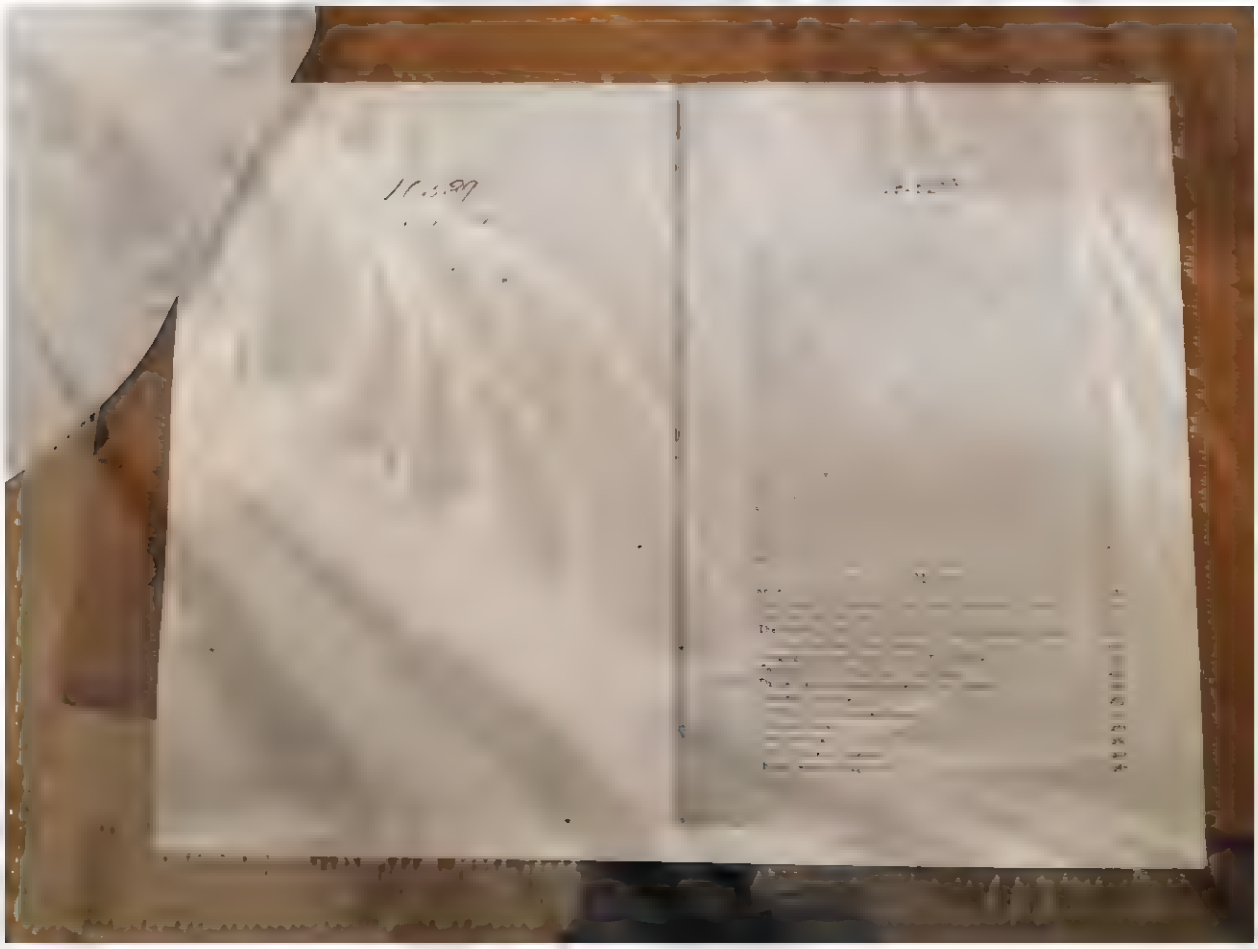
he has kept to
friends were
seeing distance
as the huge structu
was called and no one
exactly what it was inte
it was to be used to de
theory of communicating

Nikola Tesla Invents Wireless System of Power Transmission

New York Mar. 5. Nikola Tesla,

GUNTON'S MAGAZINE

VOLUME XXII



When the complete history of invention has [illegible] ten, it will inevitably prove a popular book because [illegible] chapters of a romantic nature that [illegible] adorn its pages. The modern word [illegible] comes from the Latin *invenire* which literally [illegible] means to come or stumble upon by chance. [illegible] to denote the accidental [illegible] was peculiarly [illegible]

[illegible]

That [illegible] inventions and inventions to-day [illegible] are of the greatest importance in the [illegible], but the great bulk of the [illegible] from the laboratories and machine shops are from inventive [illegible] appliances themselves [illegible] the task of [illegible] Intelligent experiments along [illegible] lines are constantly being pursued

in view are g
discoveries will e

him thinking when the vibrations of
the fine steel point of the most pier

gent s and h
the venture
gen would

The successful
of a
patent receives remunerations that are

of this patent is

clasp for pocket books

a fortune. The

The little brass

ty pin, the rubber

previous experience

intervals upon the

any of the modern inventors

on the market,

fingers in the doors,

one can begrudge him the ten

its he made as the result of his

the inventor of the

volutionized the con-

ugh fuel to more

any n count,

he Colt

cumulating money for his heirs.

There is a group of these living inventors today

whose names are household words and whose inven-

them every year

important inventions

flowing in upon him at a rate that [illegible]
flying It is said that if he w[illegible]
native genius to the discovery and [illegible]
articles of genera[illegible] industrial use he [illegible]
millions in a few years [illegible] he prefer[illegible]
own wa[illegible] working out [illegible] problems
never return him [illegible]

[illegible] third member of this group of
was associated with Profess[illegible]
[illegible] years and their combine[illegible]

of bankruptcy, ready to topple into ruin [illegible]
tion of the United States government [illegible]
grant h[illegible] tariff gratuities, regardless of domestic [illegible]
[illegible] This is what a suddenly recr[illegible] army [illegible]
[illegible] phi[illegible] other plats in an equally sudden spasm
[illegible] tender sentiments are asking us to believe [illegible]
[illegible] purpose grows paler the longer the sugar
trust and free trade experts figure

[illegible] vociferous cry has been that we
[illegible] to help [illegible] To
this end our own commercial policies have [illegible]red
Now we are being exhorted to give Cuba free trade for
an additional reason, to keep her from spending her
money in the European markets. To bolster up this
position more figures are exhibited We are to [illegible] that
[illegible] Cuba [illegible]

[illegible]
[illegible]
[illegible]

THE WALDORF

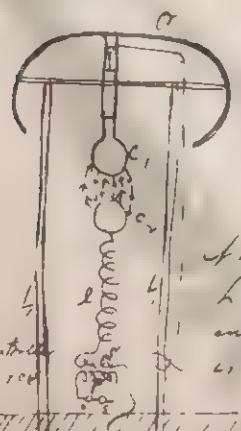
The Waldorf-Astoria,

Fifth Avenue, 33rd and 34th Streets
and Astor Court,

THE ASTORIA

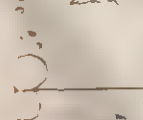
New York, May 2, 1901

from old pole



[illegible]

following results may be confidently expected
with smaller vessels 300 feet and upwards at very
cheap construction as best designs for
roof will comprise a single platform and spher-
ical bodies of large circumference [illegible] The cos
[illegible] of latter will be given [illegible] detail
[illegible] platform 30 meters diameter, [illegible] supports or
[illegible] and 15 [illegible] rotation as shown in sketch below
[illegible] at a distance with a corresponding [illegible]

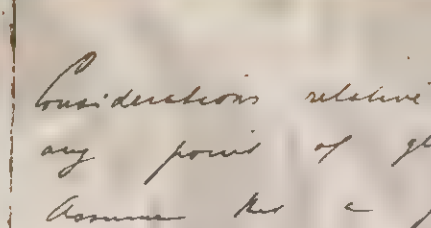


[illegible] expansion of the structure will [illegible] the spherical
[illegible] spherical [illegible] may be obtained. [illegible] spherical
[illegible] 20 m [illegible] each of an expansion of 200 C, [illegible]
[illegible] 10 in each of an expansion of 200 C, [illegible]
[illegible] 30 × 200 = 6000 C [illegible] short [illegible] [illegible]
[illegible] consideration. But may a great many [illegible]
[illegible] smaller. Extreme [illegible] [illegible]
[illegible] the [illegible] C [illegible] consideration [illegible]
[illegible] that of each spherical [illegible] [illegible]
[illegible] the surface of one spherical [illegible]
[illegible] π × 400 [illegible] fully [illegible] design. We [illegible]
[illegible] $\frac{\pi \times 400}{6 \times 3 \times 10^3}$ [illegible] [illegible]
[illegible] = 10 [illegible]
[illegible] $\frac{\pi \times 400^2 \times 10 \times 3}{6 \times 3 \times 10^3}$ = [illegible] [illegible]
[illegible] of the plus expansion [illegible]
$\frac{P}{10^3} = \frac{1000}{4 \times 10''}$ [illegible] $P = \frac{[illegible] \times 10}{6}$ = [illegible] [illegible]
[illegible] estimate [illegible] [illegible] 1000000 [illegible]
[illegible] 1000 [illegible] expansion [illegible]
Considering [illegible] [illegible] [illegible]
[illegible]
$\frac{1000}{9 \times 10''} V = \frac{63 \times 9 \times 5}{9 \times [illegible]} P$ [illegible]

Oct. 17. 1901

Considerations relative to rate of energy delivery at any point of globe with long Island apparatus

Assume that a grounded secondary is employed excited by a primary through which condenser discharges and let both the circuits be in perfect tune so that the secondary system vibrates the same rate whether the primary be closed or open. The form of wave in the air illustrated in diagram. At a primary begins to excite, at b sometime in the middle of wave train primary is opened and at c vibrations in secondary cease. In the form of electrical movement the current and e.m.f. are in phase.



Hence the power or energy given by the primary in these generators during each half wave. It must be remembered that the energy in primary was stored in dielectric form and temporarily the actual power is only that supplied by primary. The accuracy and whenever the amplitude [illegible] But in many cases where [illegible] in a simple [illegible] we are [illegible] in telegraphy when a [illegible] line is [illegible] sparking [illegible] complete [illegible] connection with a [illegible] current [illegible] we see what can be expected as maximum rate during one swing.

In previous examples $E_{max} = \frac{4}{\pi} \times 10^6$ volt. Current $\frac{\text{amperes}}{2000}$ Amp. [illegible]

Hence for largest swing rate of power will be $E_{max} I_{max} = \frac{4}{\pi} \times 10^6 \times \frac{\pi}{2} \times 2000$ [illegible]

Now a spherical bell or shell tone

Consequence, bell [illegible] suppose a strip of ground [illegible] wide $\frac{1}{2} = \frac{1}{100}$ [illegible] the current through strip will be $\frac{1000}{[illegible]} = 2000$

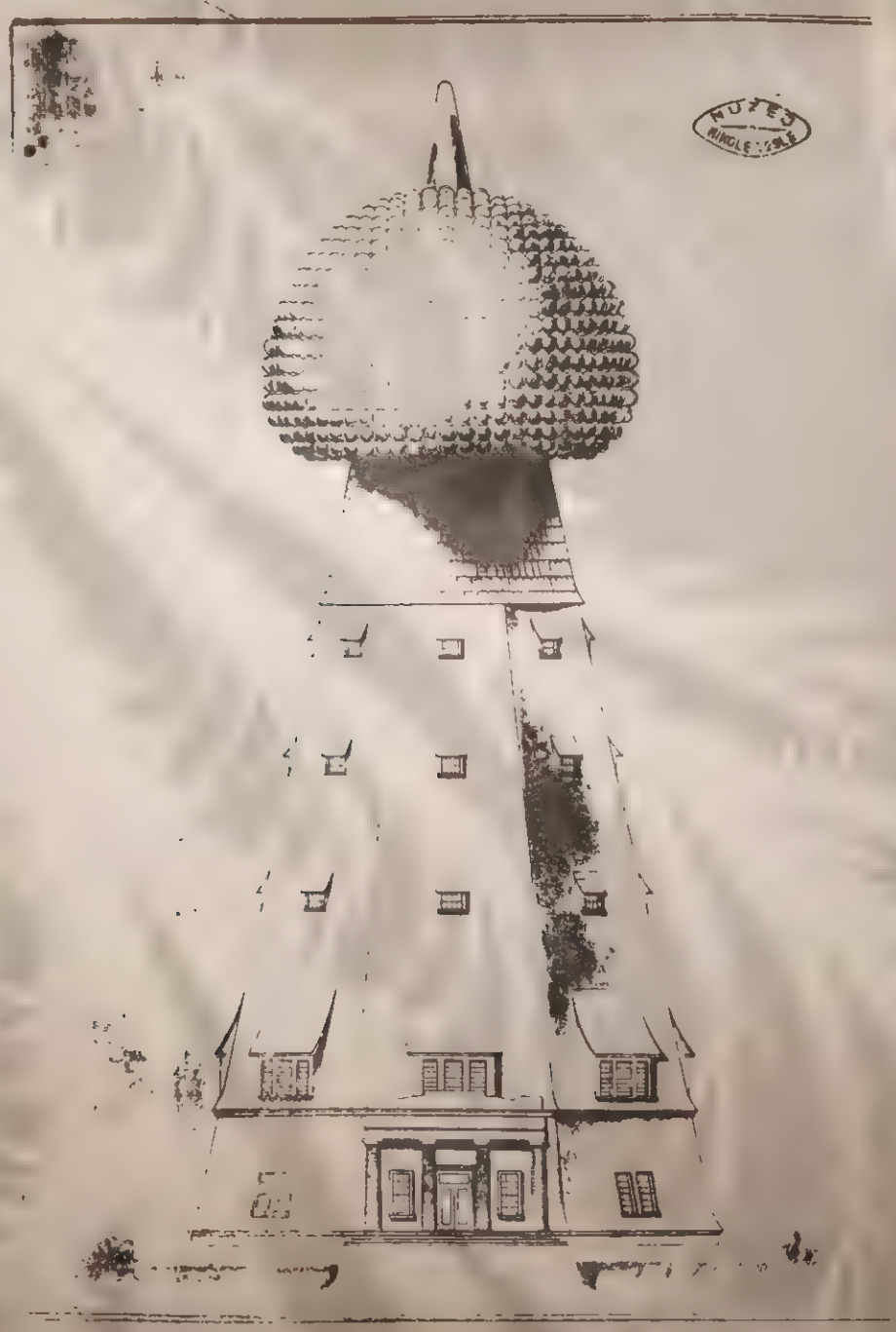
$L = \frac{\pi}{4 \times 10^6}$ Energy in strip [illegible] expected at stupendous rate [illegible]

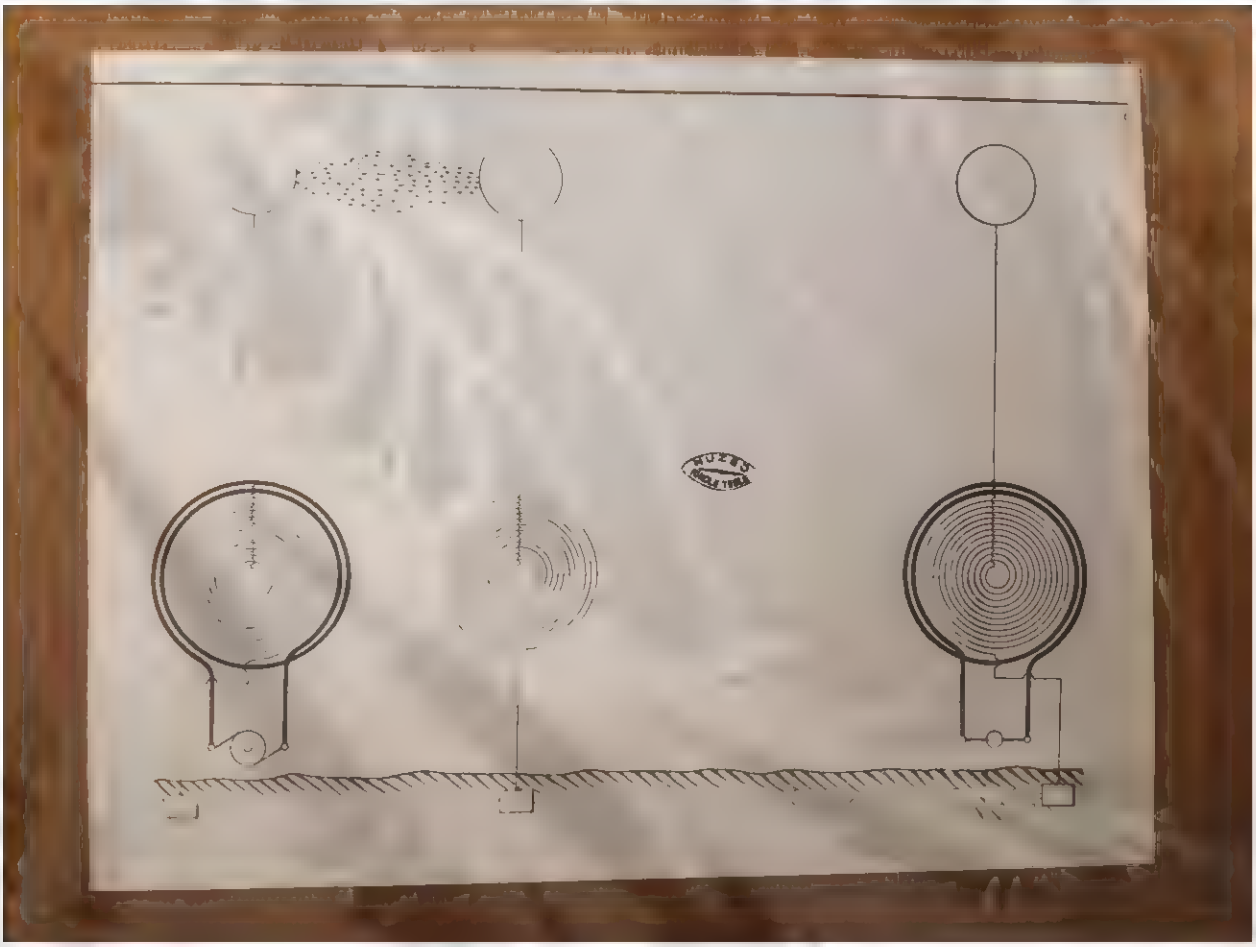
$\frac{W}{max} = \frac{1000}{[illegible]} \times 10^6 = [illegible]$ watts $E_{max} = [illegible]$ volt

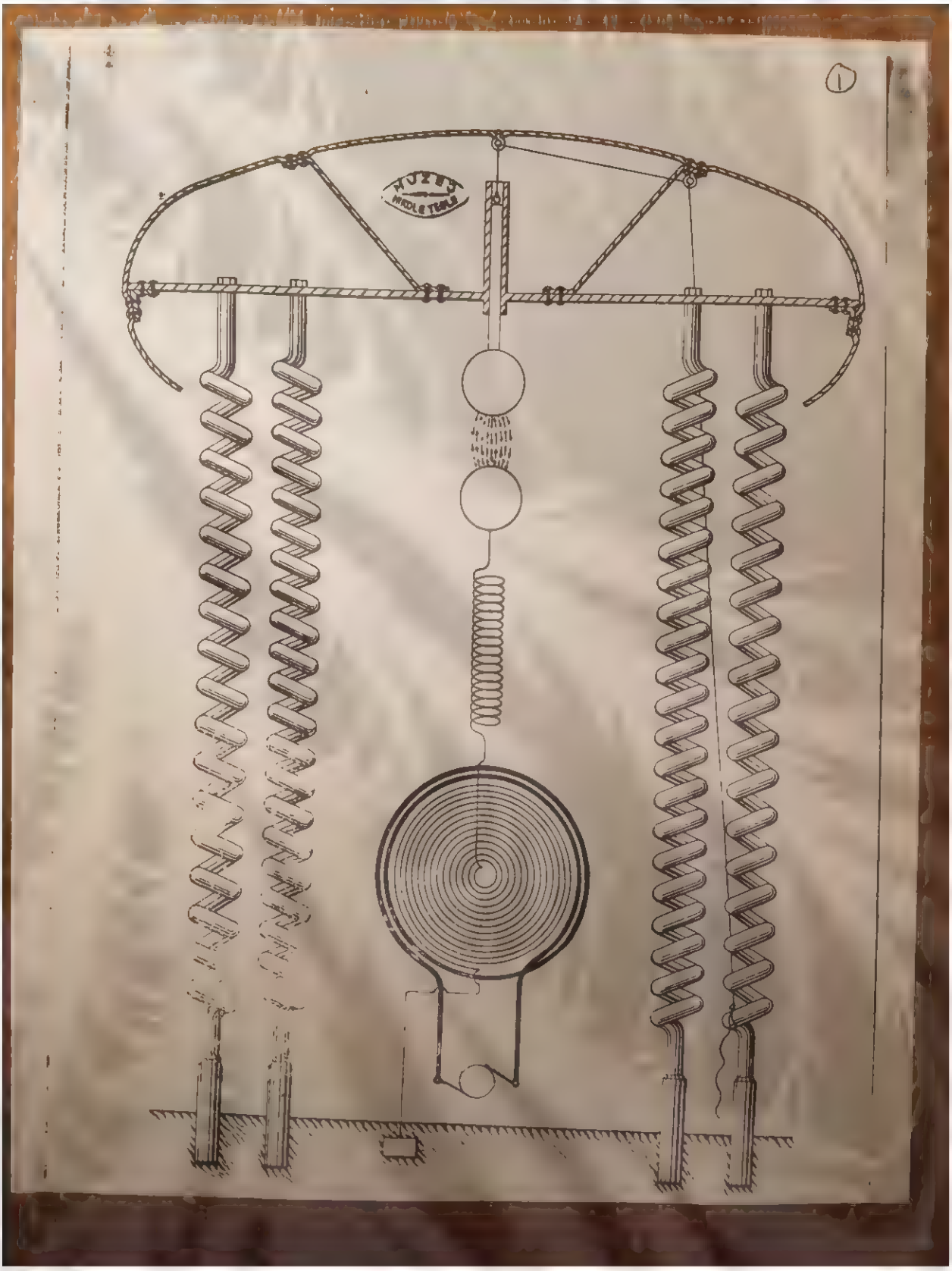
[illegible] $\frac{W}{max} = [illegible]$ watts [illegible] $E_{max} = [illegible]$ volt

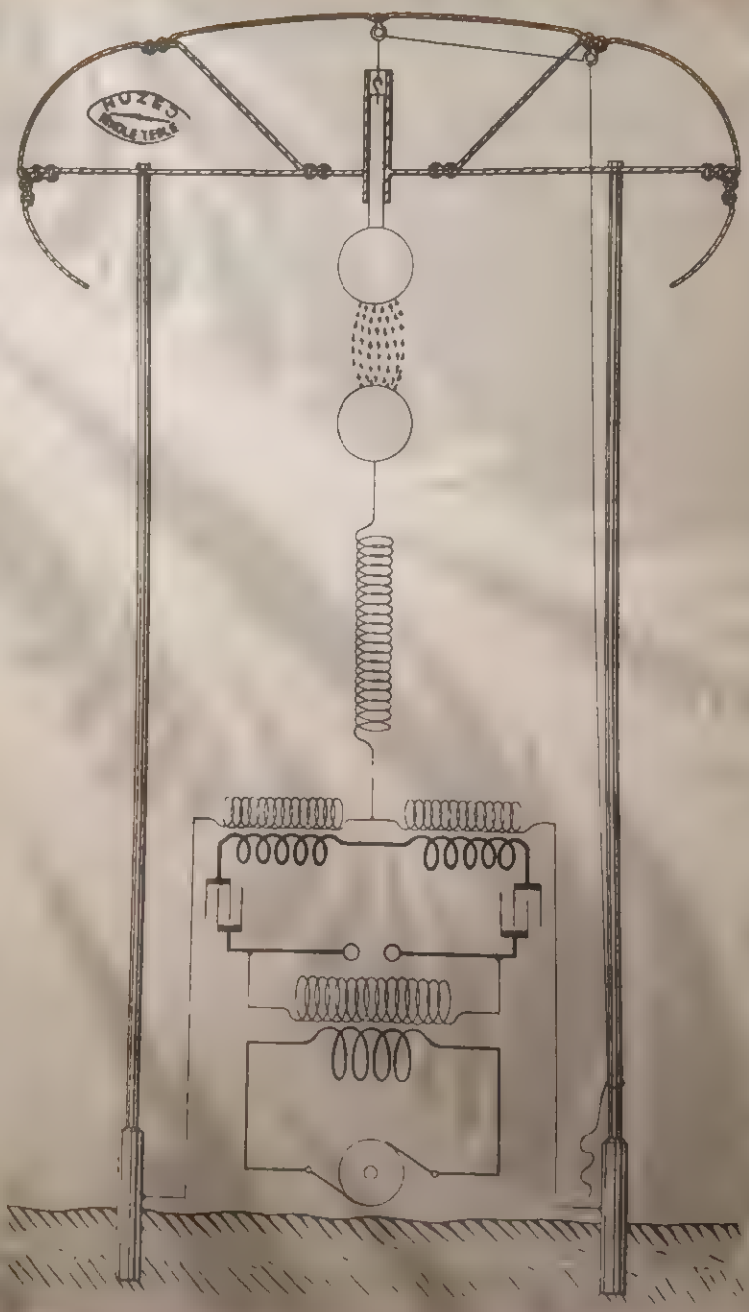
[illegible] $E_{max} = [illegible]$ volt $E_{max} = \frac{\pi}{4 \times 10^6}$ [illegible] and [illegible] watts

perfectly [illegible]






HUZER
MIDDLETOWN


HUZES
ANGLETERRE

E. [illegible] Johnson:

Replying [illegible] are ever run across [illegible]

[illegible] move with the [illegible] revolutions [illegible] in vain time is invested [illegible]

used carefully. The article which [illegible] tains sufficient indication to lead [illegible] conclusion.

I was sorry that [illegible] ore yesterday, [illegible] [illegible]

[illegible] vacation, I remain,

Yours very ~~truly~~ sincerely

Nikola

R. U. Johnson, [illegible]
Ce[illegible]
[illegible]

Johnson,
Editor of

[illegible] Broadway, New York,
June [illegible] 1[illegible].

My Dear Luka; -

I [illegible] that my friend Kohlsaat [illegible] [illegible] course, that he is now the proprietor of the [illegible] as well as its Editor.

I shall certainly be delighted to see R.U.J. the second, and hope that besides the qualities you name, he has also inherited some of those of his grandfather.

[illegible]

[illegible]

[illegible]

R. U. Johnson, Esq., [illegible],
Century Magazine,
[illegible] Square, New York.

Notes given to G H Clark by E G Gage
December 1, 1942

RE TESLA

The first time that Tesla saw a radio station--the interior, that is--was in 1910, when E. G. Gage took him on a tour through the wireless station of the Radio Tel. and Tel. Co., "MR", in the Metropolitan Building, New York City.

Gage was an operator for the Radio Co. at the time, and had met Tesla several times previou[illegible] the factory of Fritz Lowenstein, who was a close friend of G[illegible] had worked several years for Tesla, notably during th[illegible]ments at Pike's Peak.

Tesla's office was in the Metropolitan Tower, on the 24th. floor, while the Radio Tel. and Tel. Co's. office was just above, on the 25th. Nevertheless, Tesla had never seen the station (which was in the main building, not in the tower) until the date given above.

Gage, who was by no means immune against the ladies, had been in Tesla's offices after the meeting at Lowenstein's, and at one of these times he asked Tesla's stenographer (who was far from being bad-looking) to visit the station. Tesla overheard the invitation, and at once "invited himself in". Several weeks later, the visit took place.

Tesla paid no particular attention to anything except the coupling coils. "There are my coils", he said. Further, pointing to the condensers, spark gap, etc., he said " These do not interest me; they are not mine; but those coils were my idea and they interest me greatly".

When the Radio T. and T. Co. broke up, Tesla sent for Gage; and would have given him a job, but Gage told him that a job had already been found, with the Marconi Co. Mr. Sammis of that company was going to send him as operator to the new station in the Metropolitan Tower. Gage took that job, but today his main regret is that he did not accept Tesla's offer.

Incidentally, as a sort of poor taper-off, this same year--1910--marks the date when Gage first made my acquaintance. I went to MR to measure the antenna constants for the Navy (see rough log, 1910) and met Gage there. I am glad to say that our friendship has continued unbroken down the intervening thirty two years.

G.H.Clark

Ex E G Gage

202 Metropolitan Tower,
October 13th, 1910.

My Dear Mr. Hammond;

You have probably forgotten that article I have promised and will be surprised, therefore, when I tell you that I have not abandoned it and expect to furnish it soon, if you think that it will be of any use. Will you please let me know what you think of the matter at present?

Regretting that it has been impossible for me to comply with your request at that time, I remain, with kind regards,

Yours sincerely,

N. Tesla

John Hays Hammond, Jr., Esq.,
131 Grove St.,
New Haven, Ct.

[illegible]

[illegible] to note from the enclosed [illegible] to find out about you [illegible] I knew long before. [illegible]

Hoping that you [illegible]

Yours very sincerely,

[illegible]

[illegible], Johnson, [illegible],
[illegible] Magazine,
[illegible] N.Y.

[illegible]

202 Metropolitan Tower,
November 8th, 1910.

My Dear Mr. Hammond;

I was glad to read the enclosed newspaper reports. This is water on my mill. Just go ahead and make a lot of money, then I will sue for infringement and we will divide.

Yours sincerely,

E. Peale

John Hays Hammond, Jr., Esq.,
Lookout Hill,
Gloucester, Mass.

Enclosure.

Gloucester, Mass., November 10th, 1910.

Nikola Tesla, Esq.,

202 Metropolitan Tower,

New York.

My dear Mr. Tesla:

It will be very agreeable for me to share profits with you, but I shall only do so on the condition that you share our liabilities also.

After investigating this matter I am sure that you will take little interest in it.

I expect to be in New York in a few days and hope to have the pleasure of seeing you personally with regard to the article which you have so kindly prepared for me.

The Yale faculty and undergraduates are endeavoring to get me to use what small influence I may have to induce you to deliver a lecture at Yale some time during the month of February. Having just graduated myself, I know the feeling that is prevalent in New Haven and can assure you that they would appreciate greatly having the pleasure of hearing you.

Yours sincerely,

202 Metropolitan Tower,
November 8th, 1910.

My Dear Mr. Hammond;

I was glad to read the enclosed newspaper reports. This is water on my mill. Just go ahead and make a lot of money, then I will sue for infringement and we will divide.

Yours sincerely,

N Tesla

John Hays Hammond, Jr., Esq.,
Lookout Hill,
Gloucester, Mass.

Enclosure.

202 Metropolitan Tower,
November 12th, 1910.

My Dear Mr. Hammond;

Replying to your letter of the 10th, I am very glad to know of at least one modest inventor. As I naturally surmise that your Papa would pay all our liabilities, I am willing to share in these.

I shall look to the pleasure of seeing you on your next visit to New York, when you will have an opportunity of seeing a magnificient little pump in my office.

Yours sincerely,

John Hays Hammond, Jr., Esq.,
Lookout Hill,
Gloucester, Mass.

202 Metropolitan Tower,
November 14th, 1910.

My Dear Mr. Hammond;

Judging from the enclosed, I think that you are playing a wireless possum. Notwithstanding your assurances, I will watch your progress and bring a friendly suit for infringement as soon as I ascertain that you are in funds.

Sincerely yours,

N. Tesla

John Hays Hammond, Jr., Esq.,
Lookout Hill,
Gloucester, Mass.

Enclosure.

202 Metropolitan Tower,
November 21st, 1910.

My Dear Luka;

The enclosed clipping was cut out for you a long time ago but I mislaid it. It was interesting to me to read such a statement from a critic in this country. As for myself, I have always thought that Gogol towered above all other Russian novelists as Samson over the Philistines.

I understood from Mrs. Johnson that you are to dine with me on Thanksgiving Day but the time has not yet been fixed. Will you please drop me a note or phone so that there may be no misunderstanding?

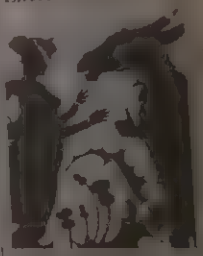
With kind regards,

Yours sincerely,

R. U. Johnson, Esq., Editor,
Century Magazine,
32Union Square, New York.

UNIVERSITY OF CHICAGO PRESS
NOVEMBER 30, 1989

NEW BOOKS AN



Literary studies

Beauty and the Beast

The Complete Tales of Nikolai Gogol

Selected Letters 1880–1903
Marcel Proust

The Painted Canoe
Anthony Winkler

Teaching

The Vocation of a Teacher
Wayne C. Booth

The Mahabharata
J. A. B. van Buitenen

1500 Rhode Island Avenue,

Washington, D. C., February 16th, 1911.

Mr. Nikola Tesla,

Metropolitan Tower, New York.

My dear Mr. Tesla:

I have just had a most interesting conference with the leading government authorities in the Wireless Department, and they seem to think that the field I am working in is a most valuable one for naval work.

As you know, I am endeavoring to develop a short-distance non-interferable system for use in fleet action. I will have a 5 K.W. sending station and a flat-top aerial 118 feet high. Only distances up to 20 miles need be covered, and transmission of 20 words per minute is the maximum requirement, written message on Morse tape preferable. These are the Government requirements. Of course the great difficulties we have to contend with are forced oscillations, and atmospheric disturbances, neither of which can be eliminated by known methods of tuning, as neither Marconi's nor Fessenden's "Interference Preventive" seems to have been successful. By using a lot of power and a sensitive detecting device, with a stiff receiving circuit having a very high inductance or a very loose coupling, I think that we can eliminate much outside interference.

On the strength of our conversation at dinner the other night, I have become much interested in your idea of our forming a joint company such as the "Tesla-Hammond Wireless Development Company." (In thinking of this name I have followed Emersonian advice, and, as you see, attached my

chariot to a Star.) The purpose of this Company would be to perfect an automatic selective system, to perfect the dirigible torpedo, and eventually to carry out your magnificent projects that will wirelessly electrify the world. My own endeavor up to the present time in the development of some practical dirigible torpedo apparatus will not be valueless, and my imagination has made me a believer and a devotee in the art of which you are the High Priest -- "Telautomatics." It is on these considerations that I think that a little, unpretentious company should be organized which may further the seeds of great possibilities.

On my return to New York I will call and see you and show you my idea for a selective system. If this idea of a small company to protect and develop our wireless patents appeals to you in the broad outline I have given you, do drop me a line here, and after having your consent I will communicate with my brother Harris and describe to him our plan.

Hoping that I am not monopolizing too much of your valuable time,

I am most sincerely yours,

202 Metropolitan Tower,
January 6th, 1911.

Walter H. Bunnell, Esq.,
76 Williams St., New York.

My Dear Sir;

Enclosed please find $40. to apply against the Duffner claim.

I was very pleased to receive New Year greetings from him, from which I drew rather a favorable inference.

In a short time I am expecting to settle this matter in full.

Yours very truly,

Enclosure.

202 Metropolitan Tower,
December 30th, 1911.

Dear Mr. Duffner;

Although you have given me considerable trouble I cannot permit this trifle to interfere with my wishing you a Happy New Year in response to your Christmas greetings. Your card indicates prosperity and if I am not mistaken in my surmise I would recommend that you send a big fat check to relieve me in my present situation.

Yours very truly,

N. Tesla

C. J. Duffner, Esq.,
Watertown, N. Y.

WALTER L. BUNNELL,
ATTORNEY AND COUNSELLOR AT
~~70 WILLIAM STREET~~
55 JOHN STREET

TELEPHONE, 5338 JOHN

CABLE ADDRESS WALBUN

NEW YORK, February 17/12

Mr. Carl J. Duffner,
Watertown
South Dakota.

Dear Sir:-

Yesterday Mr. Tesla sent me another installment of $40.00 and I am enclosing herewith my check to your order for $30.00 of it.

Inasmuch as the debtor has now reduced his indebtedness to less than $100.00, and aside from the fact that your requested it of me in a letter of a couple of months ago, I have made up a complete statement of the entire account and am enclosing the same herewith.

You will see from this statement that I have already collected from the debtor the sum of $1105.00, and that of that sum I have sent you, in all, $775.00; this leaves a balance still due to you of $29.53 and such interest on that sum as may hereafter accrue; you will also see that, in order to make me whole, I should receive a further sum of $42.31, and that the balance still due from the debtor is $71.84, or the sum of these two amounts.

In computing the interest, I have used the method sanctioned by our Courts of computing the interest on the whole amount due from the due date to the date of first payment, adding same to the principal sum and then deducting the amount of the payment, the result being a new principal on which to compute interest, and then pursuing this method as the payments are made. The total amount of interest charges as thus computed is $144.88, but inasmuch as this computation included the costs of the suit, the interest on these costs should be deducted, and doing so leaves the balance of the interest as stated, $129.91. You will also note that I have credited you with the $13.20 which you paid for the exemplified copy of the Judgment Roll in the Colorado action, and your interest includes the interest on that sum just the same as though it were a part of the principal.

In the beginning you sent me $10.00 to cover disbursements but inasmuch as it actually cost me $11.00 to secure service of a paper on Tesla, and which sum I could not make him pay to me, I have not taken that amount into consideration whatever, and we will consider it as cancelled by a set off.

Please let me know whether these figures are in accordance with yours? I expect to receive the balance of the amount due in a short time and I will then account to you further.

Yours very truly,

Walter L. Bunnell

5338

New York, February 17/1912 .190

M. Carl J. Duffner,

WALTER L. BENNETT Br

ATTORNEY & COUNSELLOR AT LAW,

[illegible] Street,

1908

Jan'y 1. To the amount of your claim against Tesla with all accrued interest to date, 911 42

To amount paid by me for exemplified copy of my judgment against him, 13 20

To all accrued interest on these two items taken together, to date, 129 91

Total sum due, $1054 53

To amount of my charges, as agreed, 250 00

To total amount due you at this time, $ 804 53

To total amount already paid to you, as follows:-

Statement of December 22nd. 1909		$320.00	
1910,	February 3rd.,	20.00	
	March 5th.,	20.00	
	April 27th.,	30.00	
	July 2nd.	25.00	
	July 29th.	20.00	
	Sept. 10th.,	25.00	
	Nov. 3rd.	30.00	
1911	Jan'y 8th.	30.00	
	March 4th.,	30.00	
	April 29th.	25.00	
	July 8th.	30.00	
	Sept. 13th.	30.00	
	Nov. 11th.	40.00	
	Dec. 13th	30.00	
1912	Feb'y 17th.,	30.00	775 00
	Balance still due you,		$ 29 53

STATEMENT OF MY CHARGES AND COSTS

To my charges as agreed,	$250.00	
To costs of suit,	107.34	
To accrued interest on these costs	14.97	
Total charges,	$372.31	
To sum retained by me thus far,	330.00	
Balance still due to me	$ 42.31	42 31
To balance still due from debtor,		$ 71 84

4/24 — Jamo
4 Shirts
1 Collar

202 Metropolitan Tower,
February 18th, 1911.

My Dear Mr. Hammond;

I was glad to receive your letter of the 16th and to know that the Government officials are waking up to the importance of your efforts. The exposition of your selective system is looked to with great interest. It would just break my heart if it should turn out that my own selective system is better than yours, notwithstanding the fact that I know it would make you happy for I have discerned that you are a gallant fellow.

The Tesla-Hammond combination looks good to me but we should have to go at it with some circumspection. I have already interested a gentleman who signs himself J.P.M. in a part of my wireless inventions and my friend Astor is now waiting for the completion of my plant to go into the wireless power transmission business which should be a colossal success. In the art of Telautomatics, however, I am perfectly free and would be glad to go into any fair proposition to exploit the field. I think that in a few years this departure will command the attention of the world.

I have just completed my turbines and am starting Monday to install them at the Edison plant where I expect to show them to you in operation on your next visit to the city.

With kind regards,

Very sincerely yours,

N. Tesla

Wireless Control of Machinery Is Solved

Professor Branly Said to Have Perfected System of "Telemechanics" Operative at 150 Miles.

Paris, Feb. 18.—Professor Branly, who has just been elected to the Academy of Science, scoring over Madame Curie by the narrow margin of two votes, has, it seems, some remarkable schemes on foot as regards telemechanics, or the operation of machinery at a distance by wireless electricity.

The professor has not made any statement yet, but it appears that he has reached some conclusions which may solve the problem. One of them is to prevent the operations from being interfered with by electric storms. If his theory is ever applied to practice, it will be possible, apparently, to direct all the operations of a fort some one hundred and fifty miles away in time of war.

An operator from the Eiffel Tower would thus be able to discharge batteries or machine guns, and—what is more remarkable—by a peculiar series of reflected waves, he would be able to observe the effects of each discharge.

The practical field of this discovery would be immense. Engines could be set in motion at a distance, the working of machinery could not only be started and [illegible] but could also be regulated and observed, by the distant operator; lamps could be lighted in lighthouses at a distance, and important operations conducted in mines without risking the lives of workmen or operators.

TESLA LABORATORY
LONG ISLAND N.Y.

202 Metropolitan Tower,
February 21st, 1911.

My Dear Mr. Hammond;

The enclosed will interest you. If we do not hurry up we may have nothing but skimmed milk left.

Yours sincerely,

Tesla

John Hays Hammond, Jr., Esq.,
1800 Rhode Island Avenue,
Washington, D.C.

Enclosure.

Wireless Control of Machinery Is Solved

Feb 18 1911

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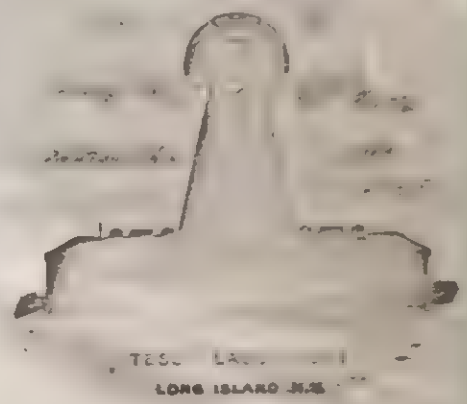

202 Metropolitan Tow
February 21st, 1911.

My Dear Mr. Harrond;

The enclosed will in
If we do not hurry up we may have no
but skimmed milk left.

Yours sincerely,

THE LIBRARY OF CONGRESS

WASHINGTON, D.C. 20540

MANUSCRIPT DIVISION

June 4, 1990

Dear Mr. [illegible]

In response to your letter of May 14, we are enclosing a complimentary copy of [illegible] February 21, 1911, to John Hays Hammond, as well as a copy of the [illegible] clipping that accompanied that letter. The citation for the clipping is the Sunday American of February 19, 1911. These items are found in container 18 of the Manuscript Division's collection of the papers of John Hays Hammond.

Sincerely yours,

James H. Hutson

James H. Hutson
Chief

Enclosure

Mr. Leland I. Anderson
2525 South Meade Street
Denver, CO 80219

Wireless Control of Machinery Is Solved

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The professor has not made any statement yet, but it appears that he has reached some conclusions which may solve the problem. One of them is to prevent the operations from being interfered with by electric storms. If his theory is ever applied to practice, it will be possible, apparently, to direct all the operations of a fort some one hundred and fifty miles away in time of war.

An operator from the Eiffel Tower would thus be able to discharge batteries or machine guns, and—what is more remarkable—by a peculiar series of reflected waves, he would be able to observe the effects of each discharge.

The practical field of this discovery would be immense. Engines could be set in motion at a distance, the working of machinery could not only be started and maintained, but could also be regulated and observed by the distant operator.

My Dear Mr. Hamm

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The practical field of this discovery would be immense. Engines could be set in motion at a distance, the working of machinery could not only be started and maintained, but could also be regulated and observed, by the distant operator.

Metropolitan Tower,
February 21st, 1911.

My Dear Mr. Hammond;

The enclosed will interest you. If we do not hurry up we may have nothing but skimmed milk left.

Yours sincerely,

N. Tesla

John Hays Hammond, Jr., Esq.,
1500 Rhode Island Avenue,
Washington, D.C.

Enclosure.

Wireless Co[illegible]

[illegible]ery Is S[illegible]

Professor Branly Said to Have Perfected System of "Telemechanics" Operative at 150 Miles

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The professor has not made any statement [illegible] appears that he has [illegible] which may [illegible] one of them is to [illegible] from being interfered with by [illegible] storms. If his theory [illegible] to practice, it will be [illegible] direct and the operation of a fort some one hundred and fifty miles away in time of war.

An operator from the Eiffel Tower would be able to discharge battleships or machine guns and, what is more remarkable—by a peculiar series of refined waves, he would be able to observe the effects of each discharge.

The practical field of this discovery would be universal. Engines could be set in motion at a distance, the working of machines could not only be started and [illegible] but could also be regulated and observed by the distant operator.

202 Metropolitan Tower,
February 21st, 1911.

My Dear Mr. Hammond;

The enclosed will interest you. If we do not hurry up we may have nothing but skimmed milk left.

Yours sincerely,

N. Tesla

John Hays Hammond, Jr., Esq.,
1500 Rhode Island Avenue,
Washington, D.C.

Enclosure.

December 30, 1911.

Nikola Tesla, Esq.,

1 Madison Ave.,

New York City.

Dear Mr. Tesla:

I hope you will forgive me the liberty of troubling you at this time when I know it is so taken up with business matters. I have, however, been receiving numerous notes from one of the editors of the Scientific American, with whom I am personally acquainted, who is desirous of having a few minutes' conversation with you relating to the Turbine. He is writing for some of the important magazines a series of articles on "Prime Movers" and I think that it would be desirable from the advertising standpoint to have our turbine included in the article. If you can spare him a few minutes of your time he would put in statements of greater interest and accuracy than if he has to surmise about the advantages of your invention.

This gentleman's name if Mr. Waldemar Kaempffert, of the Scientific American, 361 Broadway. He will be glad to see you for a few minutes any time at your convenience. I will greatly appreciate any kindness that you can show him.

I called you up yesterday in regard to procuring a few photographs of your dirigible boat of 1899. I have been asked to write an article describing my apparatus, but, considering that it would be egotistical to mention my own work and not the achievements of others, I have decided to write an article which deals as comprehensively as possible with the work of all the other inventors in this art. Your own pioneer experiments would constitute a first chapter in the history of telautomatics, and any data or photographs of these experiments would enable me to treat them with the scope which they

(#2—N. T.)

demand.

Again asking your forgiveness for the trouble to which I am putting you, believe me

Yours sincerely,

JHH,Jr/EB

202 Metropolitan Tower,
January 1st, 1912.

My Dear Mr. Hammond;

Your letter of December 30th has just reached me.

While I am rather in favor of keeping low for the time being as regards the turbine, I shall be pleased to see Mr. Kaempffert of whom I know as an able correspondent, having read numerous articles from his pen.

In reference to my dirigible boats of 1898 and 1899 I have photographs somewhere and if I can dig up one or two, you can have them. In attempting to write an impersonal article you are showing good judgement. Give all the credit to others and take none for yourself and you will feel better for it afterwards.

With best wishes for a Happy New Year, believe me,

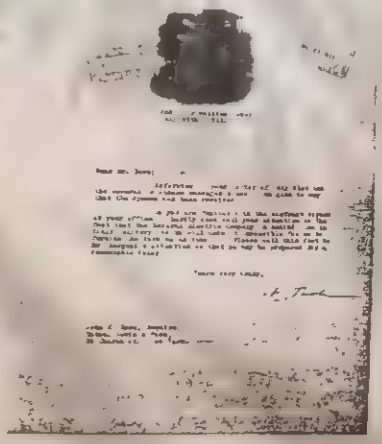
Yours sincerely,

N. Tesla

John Hays Hammond, Jr., Esq.,
71 Broadway, New York.

SCARCE TLS BY NIKOLA TESLA

108



TESLA, NIKOLA (1856 - 1943). Croatian-born American electronics engineer and inventor. TLS. 8 1/2" x 11". 1p. Long Island. July 29, 1911. Interesting business letter on outstanding Tesla Laboratory letterhead depicting the lab's facilities on Long Island. In the letter, Tesla makes reference to a dynamo's being received, and General Electric's being behind in delivery of some equipment. *"Dear Mr. Rowe; Referring to your letter . . I am glad to say that the dynamo has been received. As you are familiar with the contract signed at your office, I hardly need call your attention to the fact that the General Electric Company is behind time in their delivery, which will make it impossible for me to furnish the turbine on time. Please call this. fact. to Mr. Sargent's attention so that he may be prepared for a reasonable delay. Yours very truly, N. Tesla."* Arriving in the U.S. in 1884, Tesla was, for a short time, associated with Thomas Edison, until he left to devote his time to his own research projects for which he founded the Tesla Laboratory in New York. Tesla is best known for his invention, in 1888, of the alternating-current induction motor, on whose development advocates of alternating current had been working unsuccessfully for years. He was also responsible for many advances in the fields of high voltage and frequency apparatus Among the items he developed were the Tesla coil, a system of arc lighting, a system of wireless transmission and a generator for high frequency currents. Date of receipt stamped twice in purple at top of page, one stamp immediately adjacent to the lab vignette. Tesla's signature is fresh and clean Excellent. $1,250.00

3101

108 Metropolitan Tower,
July 29th, 1911.

Dear Mr. Zane:

Referring to your letter of July 21st and the several telephone messages since, I am glad to say that the dynamo has been received.

As you are dealing with the contract signed at your office, I hardly need call your attention to the fact that the General Electric Company is behind time in their delivery, which will make it impossible for us to furnish the turbine on time. Please call this fact to Mr. Sargent's attention so that he may be prepared for a reasonable delay.

Yours very truly,

W. Teale

John C. Zane, Esquire,
Zaman, Lewis & Zane,
50 Church St., New York.

Jan. [illegible], 1912.

Mr. Nikola Tesla,

20[illegible] Metropolitan Tower,

New York, N. Y.

Dear Sir:-

Under date of Nov. 12th you wrote us to the effect that the personal sketch previously sent by us for revision had not been received, and asked us to send the sketch again. This we did on Nov. 18th but have nothing further from you in regard to the matter. We, therefore, enclose the sketch again and will be greatly obliged to you if you will look it over and return with as little delay as possible, as we are now arranging our forms for the press.

Hoping to hear from you by return of mail, we are,

Very truly yours,

A. N. Marquis & Company.

N/NK

The following is produced from notes taken during an evening dinner at the Roosevelt Hotel in New York March 24, 1955, with Muriel Arbus and Dorothy F. Skerritt.

We all met shortly after 5:30p in the lobby of the Roosevelt Hotel and then proceeded to the Coffee House in the hotel for dinner.

Dorothy Skerritt related that she secured her secretarial position with Tesla in 1912. M.S.J. had been his secretary up to this time, but this girl was somewhat overweight and did not have (or was not able to muster) the snappy ability which he demanded of those around him. It was discovered that M.S.J. overstated the charges on the articles of apparel which he instructed her to purchase for him. Not being too agile, she accidentally knocked over a small table in the office which crashed to the floor one particularly distressing day, clinching on the spot Tesla's decision to discharge her. The office messenger boys related to Miss Skerritt how she pleaded on bended knee to Tesla to retain her, but Tesla was too disturbed to consider it and ordered her out.

Following Miss Skerritt's interview with Tesla, she met one of the messenger boys who said, "You'll get the job."

"Why?" asked Miss Skerritt.

"Because you're thin and the other girl was clumsy," was the blunt reply.

"Those messenger boys can tell you a lot of information if you'll listen to them," remarked Miss Skerritt..."Yes, I should say so!" agreed Miss Arbus.

In a conversation with George Scherff (Jr.) earlier that afternoon, he related that his father, through the years, had assisted Tesla financially

(for hotel expenses, etc.) in a total amount of [illegible] $6,000. I could tell, by the way Mr. Scherff expressed it, that there was some bitterness over the matter and guessed that it must have been a critical subject of family dissension. Miss Skerritt verified that Mr. Scherff gave Tesla this level of money, and said that "Tesla seemed to have Mr. Scherff hypnotized." Scherff would pay frequent visits to Tesla at his office at 8 W. 40th Street.

Paul Radosavljevich was a good friend of Tesla. "Wasn't he a prince of a fellow though," exclaimed Miss Skerritt.

"Whenever Bernard Behrend called on Tesla I had the most difficult time understanding him because of his Bostonian accent -- I just couldn't understand the man!"

There was a matter about which Fritz Lowenstein succeeded in making considerable profit at the expense of Tesla's radio inventions. Tesla drew Miss Skerritt close and whispered, as he always did when he had something important to say, "Miss -- Never trust a Jew! -- Never trust a Jew!"

"When Morgan Sr. was living, Tesla could get money from him just by asking for it. One day, he told me, 'I was walking down Wall Street and happened to see Mr. Morgan in his office through the second floor window. So, I went in and asked to see Mr. Morgan, and immediately I was ushered into his office. Mr. Morgan asked if he could write out a check for me and called for the boy to bring his book. Morgan signed a blank check and asked me to fill in the amount I needed -- it was $30,000.'"

"I went down to see Mr. Morgan several times to get money for Tesla," related Miss Skerritt. "The first time I remember I was surprised that Mr. Morgan came out himself personally to see me when the note was given to him asking for money. He would also call for the money and hand it to me without any questions."

L Anderson

L Anderson

202 Metropolitan Tower
May 22, 1912

John Hays Hammond, Jr., Esq.,
71 Broadway,
New York, N. Y.

Dear Mr. Hammond:

Thanks for your kind letter and article received which shows that you have done a great deal of work in the wireless field.

Not with the intention to criticise but merely to apprise you of facts, I would call to your attention that I have anticipated Thomson in the singing arc, as well as Poulsen in the silent arc giving undamped oscillations. I was also the first to bring out high frequency alternators and to use them. There is, therefore, little merit in Fessenden's effort in that direction. You will be surprised when I tell you that great many people have ridiculed me for proposing the employment of alternators in wireless at all.

As to Marconi's latest apparatus, it is in every important particular my own and now, since it is recognized that Hertzian waves are simply a loss and ineffective in transmissions at considerable distance, the frequencies I have advocated have also been settled upon. Not a suggestion of Hertzian methods and apparatus remains, my system having been universally adopted. Furthermore, incredible as it seems, no plant has as yet been produced to equal my performances in Colorado even in a remote degree, notwithstanding the fact that years have passed since.

Understanding that you are sailing within a day or two, I write to wish you a happy journey.

With regards, believe me,

Very truly yours,

N. Tesla

May 20, 1912.

Nikola Tesla, Esq.,

1 Madison Avenue,

New York City.

My dear Mr. Tesla:-

I am taking the liberty of sending you a short article which I have written for popular consumption, and in which I have mentioned some of your valuable work in the art.

Hoping that this will find you in the best of health, and with encouraging reports from the turbine, believe me,

Very truly yours,

Enc.

New York, N. Y., December 6, 1912

My dear Luka:

I am returning under enclosure your admirable poem as well as excerpt of your eloquent address before the School of Journalism. Luka Filipov did not show as much courage as you did in writing these verses about Panama.

I have received your book and in this connection I would like to make a suggestion. Could you not write a little poem on Montenegro which would add much to the value of the gift with which you intend to honor the King.

Thanks for your mention of my letter about Iasarovich. But just wait until somebody attacks you. I shall show you how I can write.

Yours sincerely,

R. U. Johnson, Esq.,
Century Magazine,
Union Square, New York

[illegible]

[illegible]

[illegible]

[illegible]

Will you please read the stories of [illegible] which I [illegible] forwarding [illegible] appearing in Servian [illegible] for the [illegible] time. You may find them interesting enough to me. [illegible] would oblige me by returning the [illegible] at your earliest convenience.

[illegible] regard to the [illegible] before me your letter of June [illegible] there is so much to say about it it would be preferable to discuss the matter.

Hoping that you have enjoyed the evening, I remain as ever,

Yours sincerely,

[illegible]

Tesla's Wardenclyffe station taken on an ethereality character.

202 Metropolitan Tower
February 16, 1913

John Hays Hammond, Jr., Esq.,
71 Broadway,
New York, N. Y.

Dear Mr. Hammond:

I have had several conversations with my friend, R. U. Johnson, Editor of the Century, in regard to your recent experiments in teleautomatics and have recommended to him to ask you to write an article for that magazine.

This would be an excellent opportunity and I think that you should avail yourself of the same.

Yours very truly,

[illegible]

February 19, 1913.

Dear Mr. Tesla:-

I wish to express to you my deep appreciation of your kind recommendation of me to Mr. Robert Underwood Johnson.

It is needless to say that I feel particularly honored by your endorsement, having in mind, not only your scientific prominence, but also your unquestionable literary attainments.

Sincerely yours,

Nikola Tesla, Esq.,
Metropolitan Tower,
New York City, N. Y.

Machine Used Riehlé 60 thousand lbs

Tested James D. Macgregor.

Test Number	20439	35
	1 □"	2 "
Gauge Length in Inches	8.00	8.00
Width in Inches	1.018	1.012
Thickness in Inches	.073	.072
Area in Square Inches	.0743	.0729
Yield Point in Inches	.255	.220
Elastic Limit in Inches	[illegible]	.002
Ultimate Load in Inches	[illegible]	.0614
Per Cent of Elongation	[illegible]	
Per Cent of Reduction of Area	5	—
Yield Point in pounds	[illegible]	5.7
Ultimate Load in pounds	[illegible]	
Yield Point lbs per sq. in.	2543	16653
Ultimate Strength lbs per sq. in.	[illegible]	—
Character of Fracture	[illegible]	[illegible]
	½" square	14 gauge
Character of Fracture	gauge	square
	Silky	Silky

[illegible] Remarks: [illegible] for a [illegible] nations, making load [illegible]

Columbia University
the City of New York

NGINEERING DEPARTMENT
TING LABORATORY

T OF TENSION TESTS

Made for N. Tesla, Esq.
202 Metropolitan Tower,
New York City

Aug 11, 1893.

37	38	39
4 =	5 =	6 =
800	800	800
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
2 1/8' inside gauge	1/2' inside gauge	2' inside gauge
Silky	Silky	Silky.

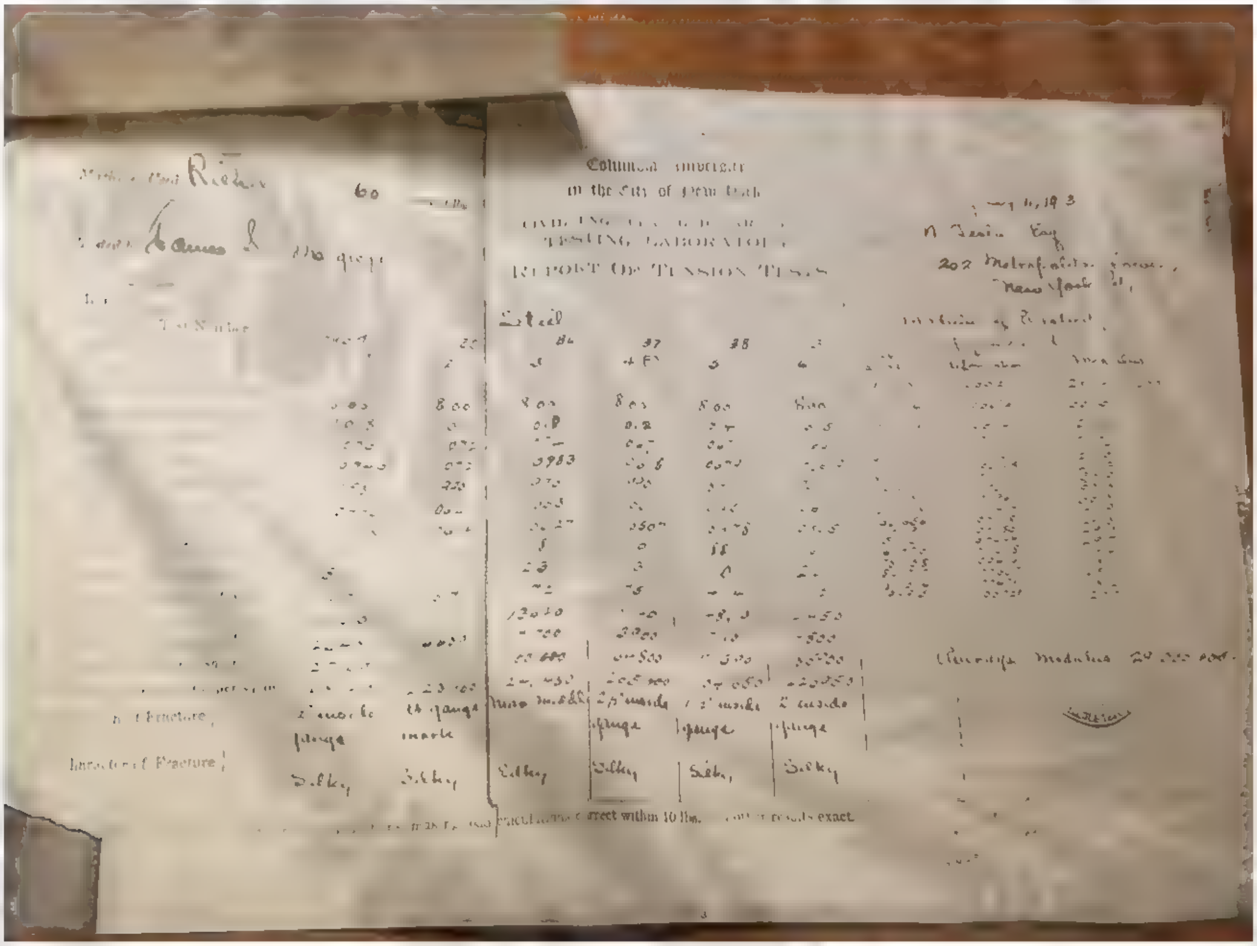
Modulus of Elasticity

Specimen #6

Unit Load	Unit deformation	Modulus
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

Average Modulus [illegible]

exact within 10 lbs, and other results exact.



Columbia University
in the City of New York

TESTING LABORATORY

REPORT OF TENSION TESTS

Riehle 60

N. [illegible] Esq
202 Metropolitan [illegible]
New York

Steel

			37	38	
800	800	800	800	800	800
		3983			
		12010			
Location of Fracture	2" inside gauge	At gauge mark	Near middle	2½" inside gauge	1½" inside gauge	2" inside gauge
Character of Fracture	Silky	Silky	Silky	Silky	Silky	Silky

Average Modulus [illegible]

Scale correct within 10 lbs. results exact.

HAMMOND RADIO CONTROLLED BOAT SUCCESSFUL.

Army and navy experts have reported the device of John Hays Hammond, Jr., for radio control of surface craft to be sent laden with explosives against enemy ships, a success, and predict similar results with submerged craft.

Secretary Baker wrote the House appropriation committee recently that the joint army and navy board was "convinced of the practicability of the control" of the surface craft, and added that there had also been demonstrations of the possibility of the control to a craft, completely submerged, except for an air in-take pipe.

Before finally deciding on the purchase of the patents for $750,000 the board desires further experiment with the submerged craft.

Construction of the submerged craft, which will be about 80 feet long by 7 feet in diameter, will take two years, according to Mr. Hammond, who told the committee, he had spent ten years and $400,000 on his invention.

"The board considered the ability of the enemy to interfere with the control of the vessel by radio energy. Mr. Hammond's claims are that no interference can be had with the craft outside a radius of 100 to 150 yards from the source of the energy; that is, from the radio plant of a battleship, for example."

Major-General F. W. Coe said he had run the craft "all around vessels coming into the harbor at will." Mr. Hammond said an aviator after four hours' training on control, was able from a height of 9,000 feet and a distance of six or seven miles to exercise absolute control over the high-speed boat.

February 19, 1914.

Nikola Tesla, Esq.,

1 Madison Avenue,

New York City.

My dear Mr. Tesla:-

I am enclosing under separate cover a popular article regarding my work, published in McClure's for March.

I wish to state that I feel rather badly about the treatment given me by the Editorial Department of McClure's. I laid particular emphasis on the fact that I wished to give due credit to other inventors along this line of work.

You have probably received many newspaper clippings relative to my work and mentioning your name. A picture of your telautomaton was to be published with this article, with reference which I made of your being the pioneer in this work in the United States. However, this matter and a number of other important modifications made by me were quite ignored by McClure's, and the whole thing rushed feverishly into print.

I am

Yours sincerely.

Nicola Tesla

MEADOWCROFT

June 22 1914.

Dear Mr. Edison,

Permit me to extend to you and your family my hearty and respectful congratulations. I hope sincerely that the marriage of your charming daughter will prove the beginning of a new life of undisturbed happiness.

Trusting that you are carrying on your valuable work in the full enjoyment of mental and bodily vigor I remain as ever

Yours faithfully

N. Tesla

The Waldorf-Astoria
New York.

April 27. 1915.

Rev. Frederic R. Marvin

537 Western Avenue

Albany

N. Y.

Reverend Sir,

Replying to your favor of 24th inst. I should say that death by Electricity must be absolutely painless, provided that the apparatus is devised

and the electric force applied by a skilled expert. The cessation of the life process takes place in an interval of time so short that conscious feeling is out of the question. And if the work is not completely done the unfortunate individual may be made to endure frightful pain.

Respectfully yours

Nikola Tesla

8 West [illegible] Street
New York, N. Y.
September 29, 1915

Benjamin F. Miessner, Esq.,
Purdue University,
Lafayette, Indiana

My dear Sir:

Your favor of September 24th has been received in due course and has interested me in view of your forthcoming book on "Radio Dynamics". Some time ago my friend, Charles E. Speirs of the D. Van Nostrand Company, told me that you were engaged in its preparation and I commended it for publication as very little has been written on the subject. Personally, I believe that the name is not the very best as it conveys the idea that radiations are, if not motive, at least the controlling agent, while, as a matter of fact, such is not the case.

I am naturally greatly absorbed in this field of invention which has been barely touched and which I look upon as extremely promising. In an article in the Century Magazine, copy of which I am forwarding to you, I have related the circumstances which led me to develop the idea of a self-propelled automaton. My experiments were begun sometime in '92 and from that period, on, until '95, in my Laboratory at 35 South Fifth Avenue, I exhibited a number of contrivances and perfected plans for several complete telautomata. After the destruction of my Laboratory by fire in '95, there was an interruption in these labors which, however, were resumed in '96 in my new Laboratory at 46 East Houston Street where I made more striking demonstrations, in many instances actually transmitting the whole motive energy to the devices instead of simply controlling the same from distance. In '97 I began the construction of a complete automaton in the form of a boat, which is described

in my original patent specification #613,809. A copy of this, also, is being forwarded under separate cover. This application was written during that year but the filing was delayed until July of the following year, long before which date the machine had been often exhibited to visitors who never ceased to wonder at the performances. The drawings of this specification were made from this machine to scale. In that year I also constructed a larger boat which I exhibited, among other things, in Chicago during a lecture before the Commercial Club. In this lecture I treated the whole field broadly, not limiting myself to mechanisms controlled from distance but to machines possessed of their own intelligence. Since that time I have advanced greatly in the evolution of the invention and think that the time is not distant when I shall show an automaton which, left to itself, will act as though possessed of reason and without any wilful control from the outside. Whatever be the practical possibilities of such an achievement, it will mark the beginning of a new epoch in mechanics.

I would call your attention to the fact that while my specification, above mentioned, shows the automatic mechanism as controlled through a simple tuned circuit, I have used individualized control; that is, one based on the co-operation of several circuits of different periods of vibration, a principle which I had already developed at that time and which was subsequently described in my patents #723,188 and 723,189 of March, 1903. The machine was in this form when I made demonstrations with it in 1898 before the Chief Examiner, Seeley, prior to the grant of my basic patent on Method of and Apparatus for Controlling Mechanisms at a Distance.

In my experiments and investigations in Colorado from 1899 to 1900, I developed, among other things, two important discoveries which will be essential in the future development of telautomatics. They are described in my patents #685,953 and 119,732 which were taken out at a later date. These two advances make it possible to supply to an automaton great amounts of energy and also to control it with the utmost accuracy when it is entirely out of sight and at any distance.

During the past few years I have devoted much of my time to the perfection of a small, high speed vessel and have developed a new form of prime mover which makes it possible to develop several horsepower for each pound of weight and in my latest designs I am embodying this new machine together with certain new means of propulsion in an endeavor to produce a most effective weapon of defense, such as would seem to be at this time of paramount importance to the United States.

I may be able to respond to your request to furnish you one or two illustrations but am so driven with important work that it would be next to impossible for me to prepare material, myself, for publication in your book which I hope will prove a complete success.

Yours very truly,

N. Tesla

P/S- I have added to the material forwarded, a few other specifications which might be of interest to you in this connection.

8 East 40th Street
New York, N.Y.
October 8, 1915

Benjamin F. Miessner, Esq.,
Purdue University,
Lafayette, Indiana

Dear Mr. Miessner:

I have duly received your favor of the third instant and wish to thank you for your appreciation of my work, as well as for the delightful frankness with which you have expressed yourself in regard to my mental balance. This is news to me as all my intimate friends, some of whom are men of great achievement, are never ceasing in telling me just the opposite.

It also pleases me to note your receptiveness and enthusiasm which augurs well for your future success.

Perhaps you are right in the choice of the title for your work. My objection to the word is that it implies control by radiations while the art requires a different agency for successful practice.

You are, of course, welcome to make such quotations from my records as you see fit. I will probably be able to send you a couple of photographs giving views of automata I constructed and exhibited.

As to your kind offer to honor me, I am very much obliged to you for the same but I believe that it will be much better for the success of your book not to give too much prominence to any contemporary. Mr. Speirs is a

5,775]

men of unerring judgment in this respect and you can do no better than follow his advice.

Wishing you the best success in what you have undertaken and looking to the pleasure of meeting you, personally, some time, I remain,

Very truly yours,

N. Tesla

8 West 40th Street
New York, N. Y.
November 8, 1915

B. F. Miessner, Esq.,
Purdue University,
Lafayette, Ind.

Dear Mr. Miessner:

In arranging my correspondence in a new office just installed, I ran across a letter from you dated July 2d, 1914 which, so far as I can find, has not been answered and must have been overlooked. Please accept my apologies for the seeming neglect. It is my rule to always answer promptly communications from inventors and members of my profession.

In accordance with promise expressed in my letter to you of October eighth, I have had three prints prepared showing two of my telautomata which have been exhibited on frequent occasions from 1897 to 1899. They have been forwarded to Mr. Speirs of the D. Van Nostrand Company who will no doubt communicate with you in regard to them.

Believe me,

Yours very truly,

N. Tesla

[Oct. 1915]

[illegible]

[illegible]

[illegible]

and [illegible] respectfully [illegible] congratulations & hope sincerely that the marriage of your charming daughter will prove the beginning of a new life of undoubted happiness

[illegible]

[illegible] the full enjoyment of health and strength [illegible]

[illegible]

[illegible]

The Waldorf-Astoria
New York.

March 19, 1910

James L. Carman Esq.
112 Bleecker Street
Newark N. J.

Dear Sir,

Owing to change of offices by mistake in advance I imagined, otherwise I would have answered your letter before.

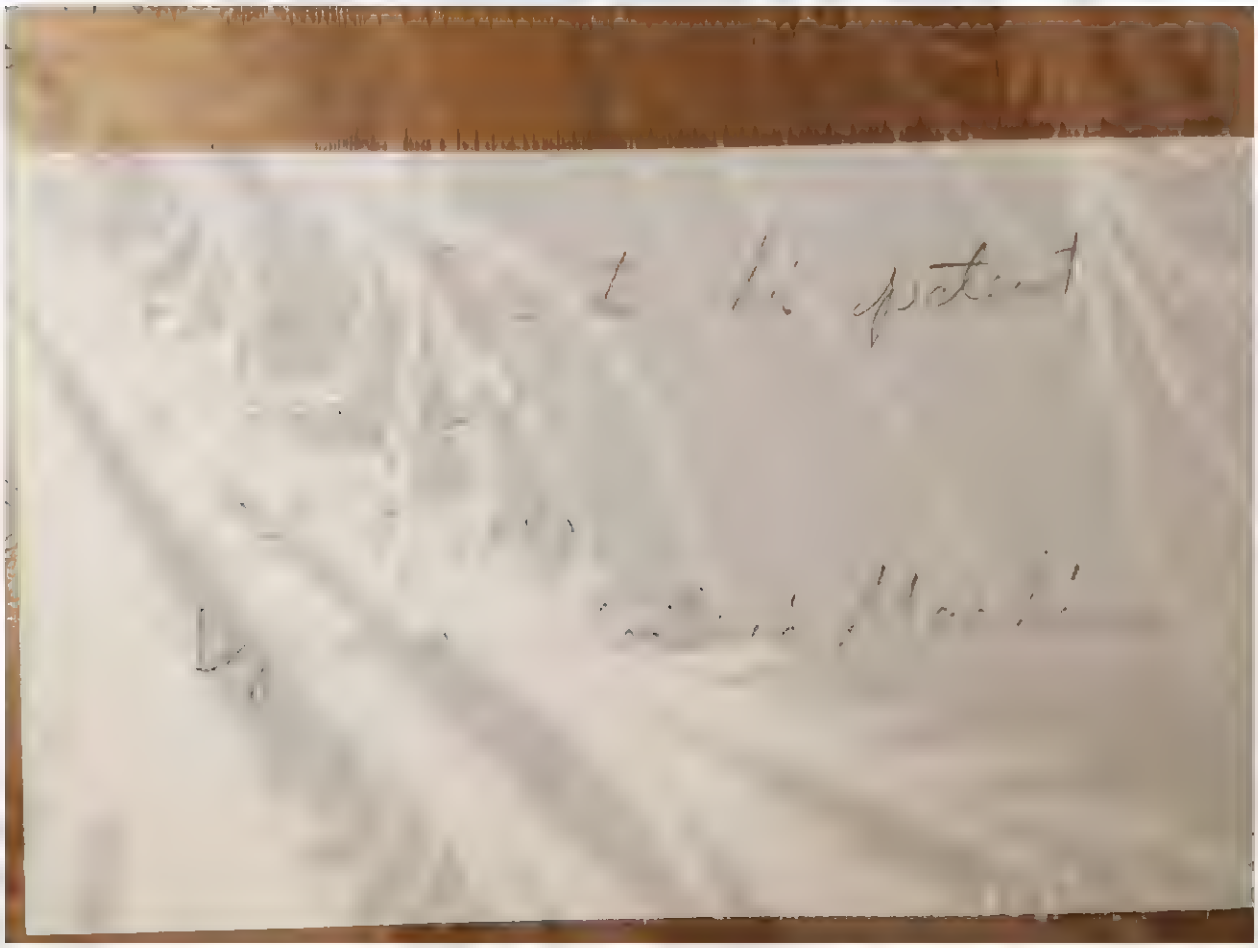
I believe it was your probably - figuring of about 150 and the lecturing of the Sun-flower could be easily explained, but your letter is not clear enough on the point.

You know of course that I am interested years ago in a machine in which we claimed to energize by means of differing flow of velocity fluid in which we claim by

[illegible] [illegible]
[illegible] to that of the field. The [illegible]
is now utilized in the so called
Sollschmidt diphfrequency [illegible]
for [illegible] Then it [illegible]
is it

Yours very truly

N Tesla



[illegible]

(ILLUSTRATED)

A WEEKLY JOURNAL OF

ELECTRIC LIGHT, TELEPHONE TELEGRAPH AND SCIENTIFIC P

Vol. 8. No. 24. WEEKLY.

NEW YORK, SATURDAY, AUGUST 11, 1886.

Copyright, 1886, by [illegible] Review Publishing Company, 21 Park Row, New York

[illegible] at Post Office, New York, as [illegible]

Electrical Flying Machine.

A recent despatch from Berlin states that the success of [illegible] and his [illegible] in a balloon the journey across the Channel from Cherbourg to London has caused no little excitement there. [illegible] a decided advance [illegible] which will be put to [illegible] Germany and [illegible] for [illegible] toward experiments [illegible] for use in war [illegible] in the balloon [illegible] be successful [illegible] of the inflated gas [illegible] size, difficult and [illegible] to fill in war, and float— a gigantic [illegible] of every [illegible] for the first gunner who can hit and bring it to the ground. [illegible] in Germany and Baranovs [illegible] have adopted the principle of the inclined plane [illegible] capable of making some [illegible] In the [illegible] the force that [illegible] the inclined plane is the hand of the boy acting through the [illegible] the resistance of the water to side long motion keeps the sail pressed against the wind. In the flying machines of Baumgarten and Baranovski the pressure is given by an engine carried by [illegible] by means of fans. [illegible] weight of the engine [illegible] development of practical knowledge of electricity [illegible] have been built which [illegible] the maximum of motive power with the minimum of weight. If the attempts should prove successful, the problem of flying in [illegible] air would, it is thought, be solved. But whether men shall [illegible] is another matter.

◆

The Tesla Electric Light Company

[illegible] has been organized [illegible] has devoted [illegible] time to perfecting a complete [illegible] system, which we take pleasure in presenting to the readers of the Review in this issue. The [illegible] of the company are in Rahway, N. J., and a branch office in New York. The president of the company is Mr. B. A. Vail, of Rahway; vice-president and treasurer, Robert Lane, of East Orange; secretary, H. C. Carmen; electrician, N. Tesla. The particular improvements that are claimed for this system relate to the efficiency, the regulation and the safety. There [illegible] novel features, particularly [illegible] of the machine and its [illegible]

[illegible] illustration, Fig. 1 [illegible] the cores of the field magnets [illegible]

pering, and the magnetic frame is [illegible] est in section at the middle. The magnetism is in this way, the inventor states, concentrated upon the [illegible] the [illegible] is [illegible] of [illegible] the armature [illegible] of the armature [illegible] partially [illegible] by [illegible] the [illegible] in the [illegible] the core, and also [illegible] resistance of the [illegible] and [illegible] armature. The shape of the [illegible] is so calculated that [illegible]

Mr. Tesla, the inventor, has obtained [illegible] of a dynamo [illegible] The [illegible] the way of [illegible] No auxiliary [illegible] are [illegible] without waste of power.

In Fig. 2 is shown a view of the Tesla arc lamp. The [illegible] objects [illegible] to be secured by the inventor were first of all simple and reliable apparatus [illegible] sequence of the fluctuations of the current [illegible] then to obtain a perfect feed and a steady light. The lamp cuts itself out and in without the aid of any auxiliary [illegible] The [illegible] of the lamp [illegible]

This system is now [illegible] in use on the streets of Rahway, N. J., where all [illegible] are privileged to see it at work. The company is now constructing a number of large machines, and is ready to [illegible] with an arc light system [illegible] no doubt, meet with great favor.

FIG. 2.—VIEW OF TESLA ARC LAMP

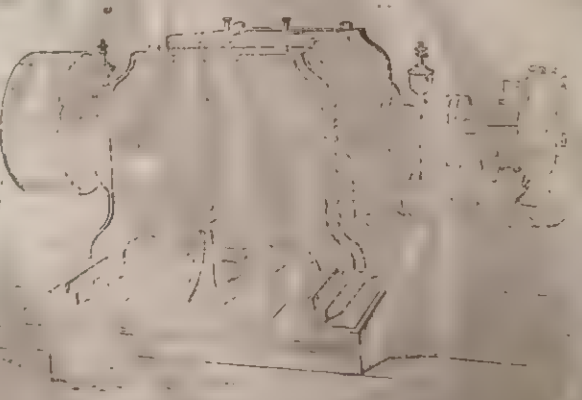


FIG. 1.—VIEW OF DYNAMO OF TESLA ELECTRIC LIGHT COMPANY

◆

Perspicacity and Prudence Combined.

"What's the matter, Jones? You look [illegible] "Now, when [illegible] [illegible] at the [illegible] of that phone."

◆

The electr[illegible] [illegible]

The Garden [illegible]

(Interestin[illegible]

Mr. Alex [illegible] Br[illegible] Camp [illegible] has just ret[illegible] has been on [illegible] Kempt says [illegible] so busy at [illegible] where there [illegible] offer [illegible] chiners [illegible] work [illegible] chine [illegible] more than [illegible]

Locally [illegible] [illegible] Whitlock [illegible] Wis. City of [illegible] Wis. [illegible] Waupaca City [illegible] Eau Claire, [illegible] La Crosse, [illegible] Aberdeen, [illegible] Several [illegible] reasons.

THE [illegible]

We [illegible] the Monarch [illegible] everywhere, [illegible] shore the [illegible] this company [illegible] origin.

One speci[illegible] people is the [illegible] with wh[illegible] While [illegible] will try the [illegible]

The M[illegible] tory Company [illegible]

GHTING LIGHT, TELEPHONE TELEGRAPH AND

o. 24. (NEW YORK, SATURDAY, AUGUST
Y.)

, by Electrical Review Publishing Company, 23 Park Row, New York. Enter

al Flying Machine.

atch from Berlin states that
e aeronaut L'Hoste and his
aking in a balloon the jour-
Channel from Cherbourg to
ed no little excitement there.
ce ful attempt to reach a
l on beforehand, and indi-
l advance in aeronautics,
ut to good use in a coming
and Russia have both for
pushing forward experi-
ng machine for use in war
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ng was the one which, pre-
iment just made by L'Hoste
rpilleur, was most likely to
It ignored the idea of the
which is enormous in size,
to fill in war, and floats—
t—at the mercy of every
ge mark for the first gun-
d bring it to the ground.
Germany and Baranovski
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acting by means of fans.
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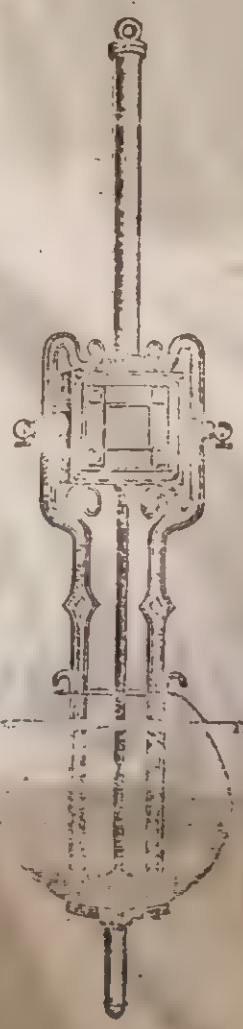


Fig. 2.—View of Tesla Arc Lamp.

currents in the armature
to reduce to a minimum the
inactive wire on the sides of t
to balance both parts of the
shape of the amature is so
these objects are obtained.

Mr. Tesla, the inventor
broad patents on the regulat
machine on entirely novel p
method of regulation secur
the way of economy and
confident are peculiar to th
No auxiliary resistances, or
are used, and the regulation
out waste of power.

In Fig. 2 is shown a view
lamp. The main objects
secured by the inventor, w
simple and reliable appara
the vibrations of the movabl
sequence of the fluctuations
then to obtain a perfect f
light. The lamp cuts itself
out the aid of any auxi
The action of the magnets
delicate that the feeding

The design of the lamp
the lamp is substantial and

This system is now in
streets of Rahway, N. J.,
are privileged to see it at
pany is now constructing a
machines, and is ready to g
eral public with an arc light
no doubt, meet with great f

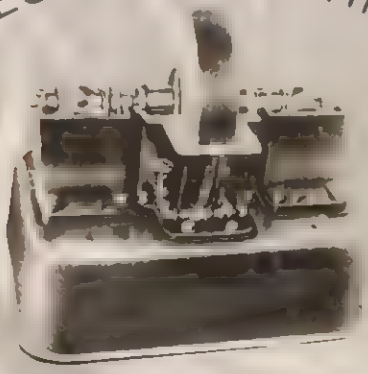
Perspicacity and Pruden

"What's the matter, Jon

RETURN
TO
NIKOLA TESLA CO.
8 West 40 St. N.Y.

TESLA COMPANY, INC.

STEAM AND GAS TURBINES
BLOWERS COMPRESSORS
VACUUM PUMPS FOUNTAINS
MECHANICAL OSCILLATORS
PRECISION INSTRUMENTS



HIGHFREQUENCY DYNAMOS
LIGHTNING PROTECTORS
INTERFERENCE PREVENTERS
OSCILLATION TRANSFORMERS
SCIENTIFIC NOVELTIES

NEW YORK 8 WEST 40TH ST
TEL. 23 VANDERBILT

NIKOLA TESLA COMPANY

8 West 40th St.
TEL 9090 BRYANT
NEW YORK


NIKOLA TESLA
COMPANY
8 West 40th St.
TEL 9090 BRYANT
NEW YORK

NIKOLA TESLA COMPANY

8 West 40th St.
TEL. 3230 BRYANT
NEW YORK, [illegible]

Edward T. Jones, Esq.,
818 Roosevelt Place,
New Orleans, La.

Dear Sir:

Your favor of the 4th inst. has been [illegible] through the courtesy of the Electrical Experi[illegible] and would have been answered promptly had it [illegible] am at present so busily engaged that I have hardly [illegible] for correspondence.

Complying with your request I [illegible] arate cover a photograph, also a copy of [illegible] February issue of the Electrical Experimenter [illegible] through the ground as through a wire is the [illegible] of my wireless system that I have advocated for years. I shall, therefore, look with special interest to your forthcoming book. *

Believe me,

Yours [illegible]

* Sold the Book on [illegible] to German [illegible]

Work to be done

1) New regulator piece [illegible] metal [illegible] same as old piece but [illegible] different [illegible] shown [illegible] sketch [illegible] new

Note We want [illegible] nut on top of same metal. (Find old nut in vault) [illegible] permit

2) Turn up and finish the two nozzle castings all except 1 [illegible] holes

3) Carbon friction contact on pulley of motor for regulating speed when grinding

4) Finish latest armature with fiber pieces 1/64" [illegible] iron (this already started)

5) New fiber bushing for lower oil chamber (already started)

6) Make ready for balancing old rotor and armature, also new [illegible] for grinding the new

7) Make two square flanges to slip on the form now used for winding coils (as explained to Fotty)

Chicago Ill.
Mar. 3. 1910.

[illegible]

I was away from my home thereon [illegible]
[illegible] my [illegible]

[illegible] in the 1st National [illegible]
[illegible] the J. Star, and was his right hand
[illegible] [illegible] with him [illegible]

I cannot write of my experience with him as
[illegible] in [illegible] Chem, but should you [illegible] in
[illegible] we could get together and [illegible] some [illegible]

I am sending you everything I have on him
[illegible] and I am [illegible] with it

I would like to know how you got the information about me as I was contacted some time ago by other people here in Chicago.

I Remain
Yours Truly
W. W. Wicher
252 No. Fairmount Ave
Chicago Ill.

NIKOLA TESLA COMPANY

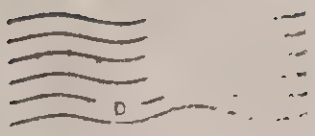
8 West 40th St.
Tel. 9090 BRYANT
NEW YORK, March 5, 1918

Dear Mr. Scherff:

Under enclosure please find letter from Mr. Tesla.

Respectfully,

George Scherff, Esq.,
17 Battery Place,
City.



George Scherff, Esq.,

17 Battery Place,

City.

c/o Union Sulphur Co.

SERB NATIONAL FEDERATION

LARGEST AMERICAN FRATERNAL SOCIETY OF SERBIAN ANCESTRY

СРПСКИ НАРОДНИ САВЕЗ

3414 FIFTH AVENUE

PITTSBURGH, PA., 15213

December 9, 1978

Mr. Leland Anderson
2525 So. Meade Street
Denver, Colorado 80219

Dear Leland:

Per your letter and request of November 28, 1978, enclosed herewith, please find a Photo-Negative, 4 X 5, of the letter in which Nikola Tesla identifies himself as Serbian in culture and heritage.

As I informed you the original is in our safe in the Serb National Federation office.

In addition, I am extremely thrilled to hear that the Nikola Tesla Biography will be published next year, tentatively in the Spring.

If I can be of any further assistance, feel free to call.

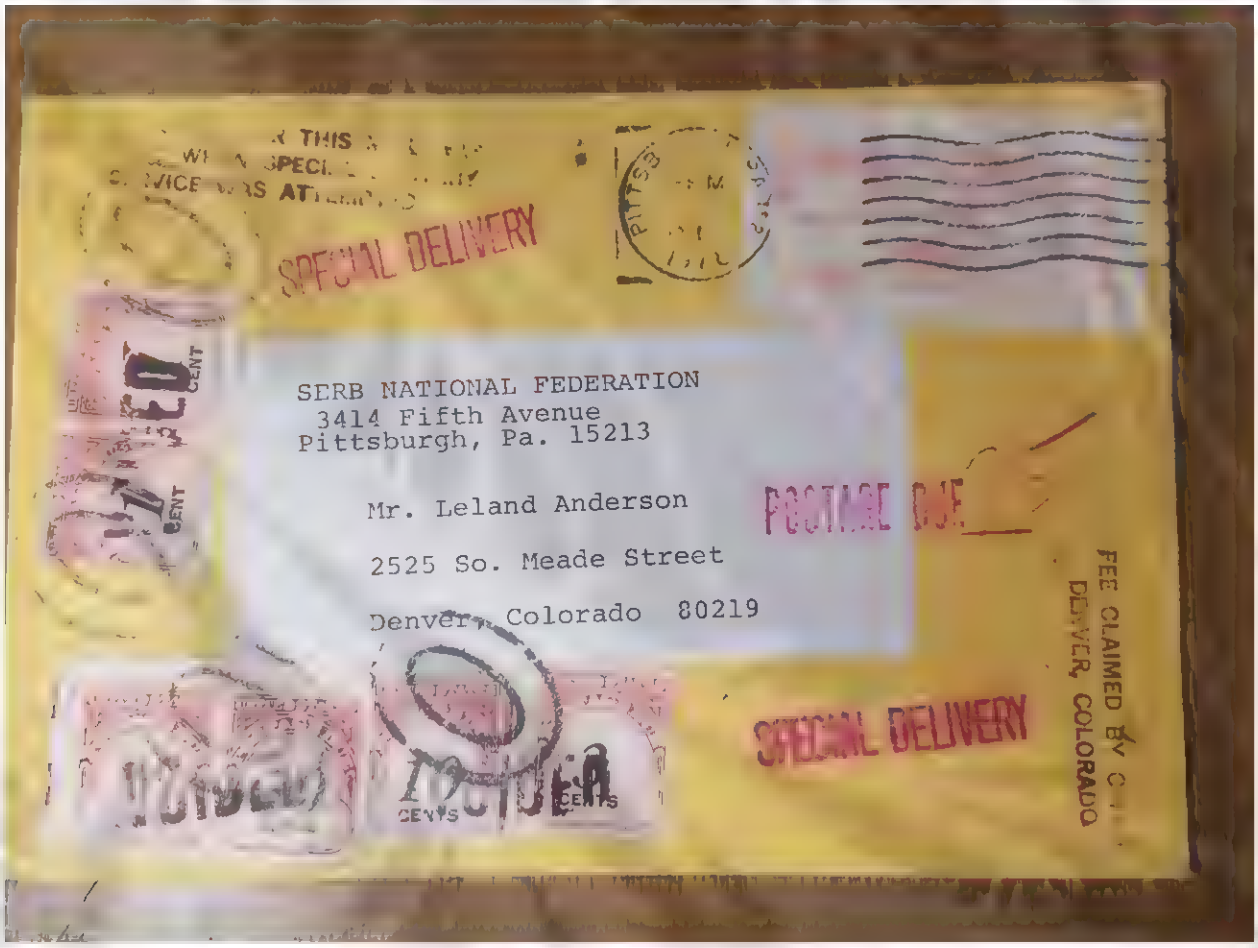
Fraternally and sincerely,

SERB NATIONAL FEDERATION

Robert Rade Stone
Supreme President

RRS:nk

Enclosure


SPECIAL DELIVERY
SERB NATIONAL FEDERATION
3414 Fifth Avenue
Pittsburgh, Pa. 15213
Mr. Leland Anderson
2525 So. Meade Street
Denver, Colorado 80219
POSTAGE DUE
SPECIAL DELIVERY
FEE CLAIMED BY
DENVER, COLORADO

[illegible] COURTESY
[illegible] NATIONAL FEDERATION
PITTSBURGH

DECEMBER 9, 1978

S. W. 40 St., New York, June 11,1921

George M. Morgan, Esq.,
Box 87,
Thompsonburg, Montana

My dear Sir:

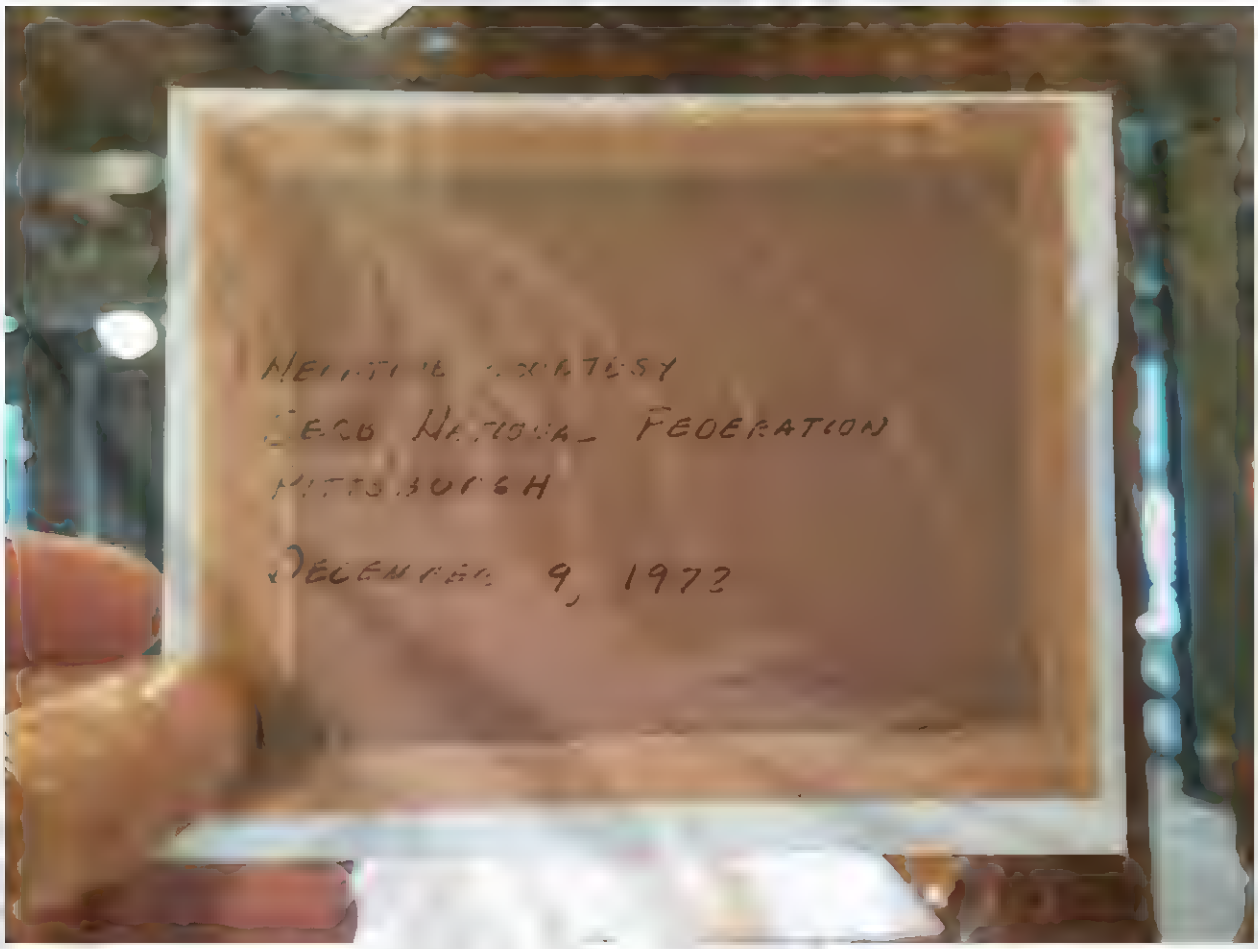
I have duly received your kind letter of May 31st and wish to thank you for the interest manifested.

Of course you know that I am a Serbian, coming from the oldest stock insomuch as my mother's name can be traced almost as far back as any other in our race. The Editor of the Kansas Farmer and Mail and Breeze does not quite realize that the Province where I was born was at that time merely under the political rule of Austria which has nothing to do with nationality.

Wishing again to assure you that I have appreciated your friendly action in the matter, I remain

Yours very truly,

N. Tesla


NEWSTIME COURTESY
ZERO NATIONAL FEDERATION
PITTSBURGH
DECEMBER 9, 1972

Leland I Anderson

1515 E River Terrace
Minneapolis Minnesota.

Dear Mr Anderson

Glad to receive your letter and particularly to receive the letter head and to see that you are really interested in the great man Tesla.

No one today knows him like I do

I was just thinking . (About 192[illegible] I [illegible] they are working on something [illegible] said that he [illegible] they [illegible] said it three dimentional [illegible] said and I hope I quote correctly(What I want to do is ,- when I have a person who is blind in the eyes and the optic nerve is still good , by electrical impulses I will sensitize the optic nerve and they will see three dimentional. by putting a device on the temple. Last sept.mber I was reading in the paper and I think I have the clipping some place that states that they are trying it.

Well that was OLD NICK day after day.

I have a resume of his record that he gave me that I would not trust to the mail. But would be pleased to meet you anytime in chicago and reveal what I have and if there is a Tesla Museum someplace perhaps I could make arrangements to give to the Speed indicator that he used in all of his Alternating Current developements.

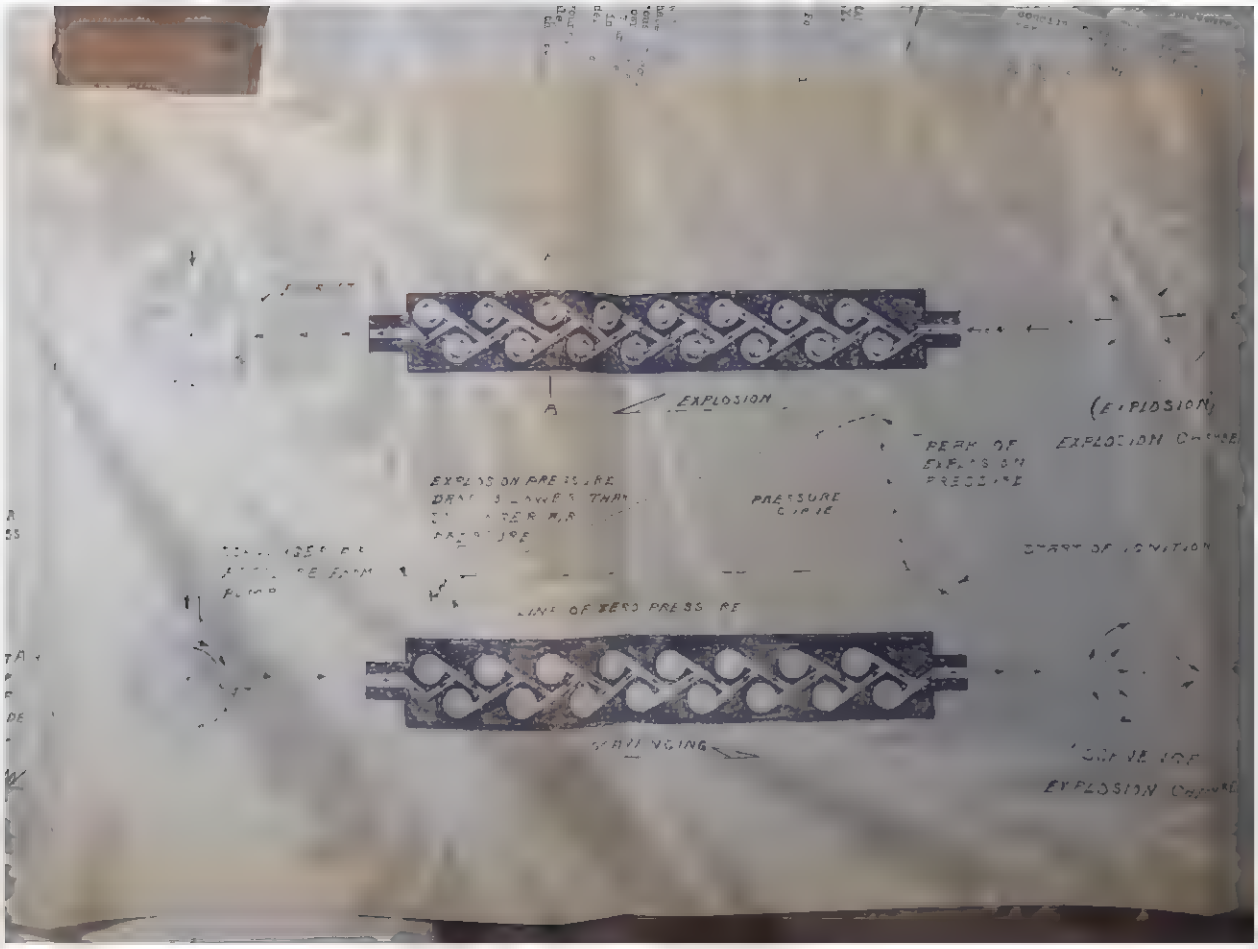
I am taking the liberty of disclosing myself in this form of a brocure that I am having faith in to help me get located even in the fall of life so if you in your travels have use for such a man as myself I would appreciate hearing from you.

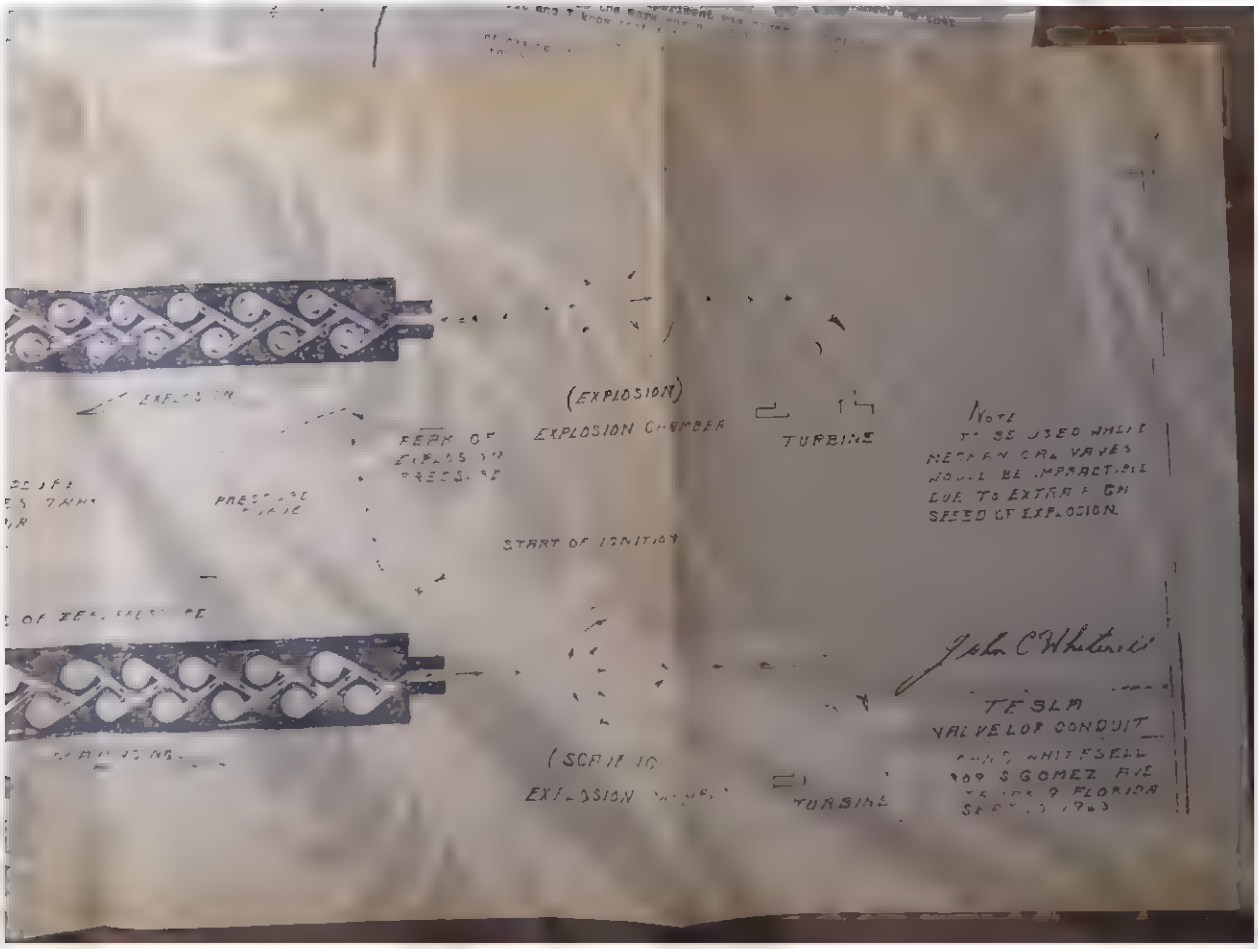
Sincerely

John G. Whitsell
1[illegible]7 E [illegible] Place.
Chicago 15 ILL

Your letter was written by what a pri[illegible], we please excuse my typing.


CLEAR GLASS
SERVENDER AS PRESSURE FROM PUMP
A


A
EXPLOSION
(EXPLOSION)
PEAK OF
EXPLOSION
PRESSURE
PRESSURE
CURVE
CHART OF IGNITION
LINE OF ZERO PRESSURE
EXPLOSION


(EXPLOSION)
EXPLOSION CHAMBER
TURBINE
PEAK OF
PRESSURE
START OF IGNITION
NOTE
TO BE USED WHILE
MECHANICAL VALVES
WOULD BE IMPRACTIBLE
DUE TO EXTREME
SPEED OF EXPLOSION.
John C Whitesell
TESLA
VALVELOR CONDUIT
109 S GOMEZ AVE
TURBINE

PHONE 876 3837

309 SOUTH GOMEZ

John C. Whitesell
TAMPA 9, FLORIDA

PROFESSIONAL ENGINEER
MECHANICAL

Mr. Leif [illegible] Anderson
[illegible] st River Terrace
Minneapolis 14 Minnesota.

Dear Mr Anderson,-

As I have advised , I was the only Engineer, Designer for Mr Tesla when he was designing a gas Turbine for Automobiles around 1[illegible], Incidentally as I look back the only metal he had to use was Mild Steel and the 10" rotor grew 1/16" in diameter at 30,000 revolutions per minute. Could Tesla had metals then as are available to take over 3,000 degrees the Turbine would have been a success as the principles are the same.

I have had a serious accident and was in the hospital from the result. Then I went practically blind and had to have cataracts removed from both eyes, therefore it is [illegible] to make some [illegible] living and have to dispose of a few of my most prixe possessions . Therefore I have enclosed a sketch of the Tesla Speed Indicator which I have for sale and am asking $75.00 for it , It is in good shape to use as an Indicator .

I will go to a Notary and swear to its authenticity If you are interested I would appreciate hearing from you.

John C. Whitesell

John C. Whitesell

Speed Indicator of Mr Nikola Tesla used by him [illegible]
of the Alternating Current Motor (He advised t[illegible]

can be used as
stop watch only

faces

used

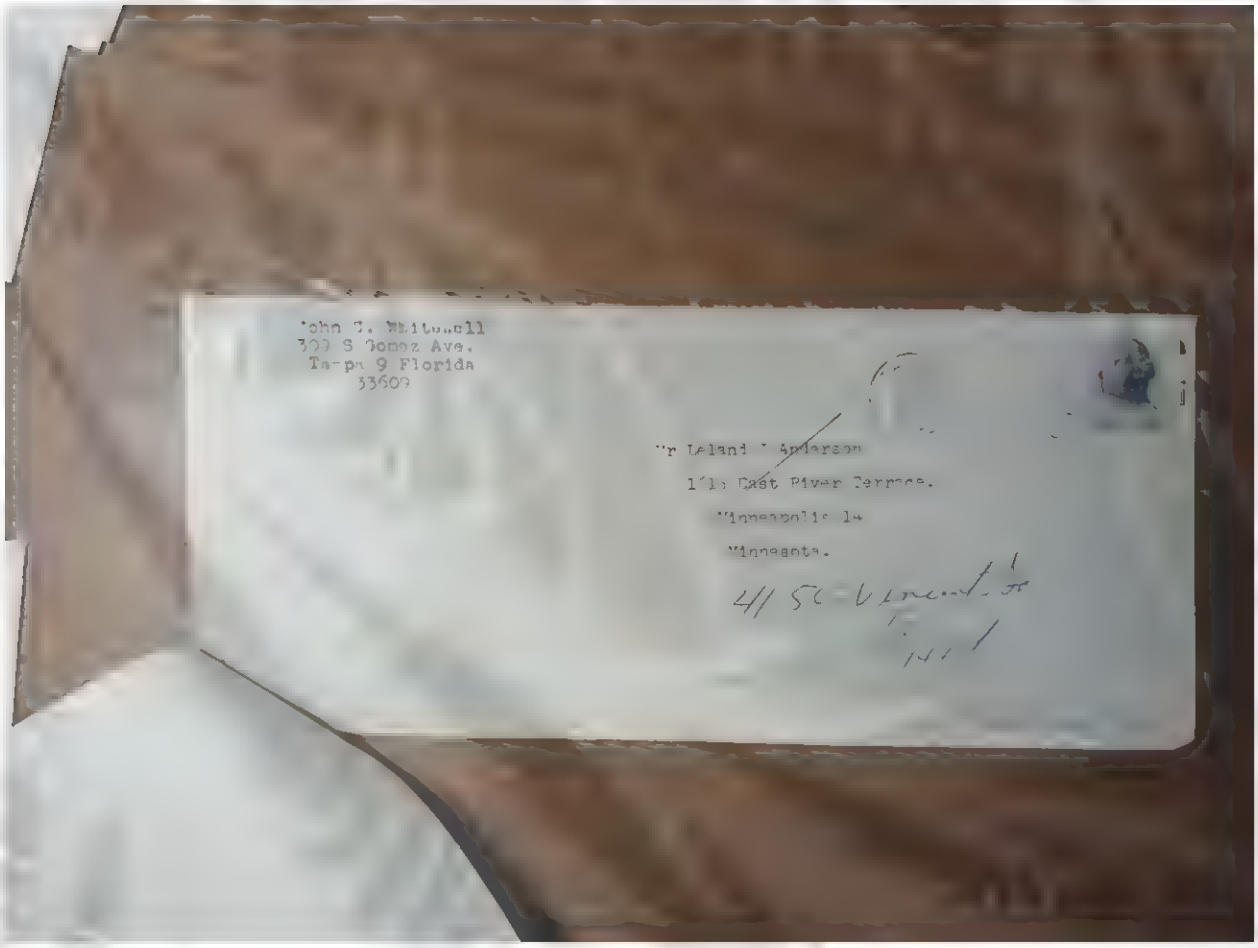
are
of oxygen

range of
from a
inch of more.

It has been a high order instrument

(Full Size)

[illegible]



John T. Whitwell
309 S Gomez Ave.
Tampa 9 Florida
33609

Mr Leland T Anderson
1[illegible] East River Terrace.
Minneapolis 14
Minnesota.

[illegible] & [illegible]
150 Broadway, [illegible]

February 1, 1926

Dr. PAUL RADOSAVLJEVICH
[illegible] of the City of New York
[illegible] Ave. and 139th St.
New York, N. Y.

Dear Dr. Radosavljevich:

I have been advised that you know Mr. Nikola Tesla quite well and that Mr. Tesla is in bad shape physically also that his financial affairs are not prosperous. I would be glad if I could learn the facts in Mr. Tesla's own interests but do not wish him to know of my inquiry, and I am therefore taking the liberty of sending you this letter in the hope that you might be disposed to give me, in confidence, such information as you may have.

Very truly yours,
Calvert Townley
Assistant to the President

v'sed by Mr George Scullin of
and as to the existance of

retained Mr Tesla to
for automob'les and
worked for him .

rvday I wrot
lieve some

John G. Whitesell
1607 E 50th Place
Chicago 15 ILL

PHONE 876 3837 309 SOUTH GOMEZ

John C. Whitesell
TAMPA 9, FLORIDA

PROFESSIONAL ENGINEER
MECHANICAL

September 10, 19[illegible]

Mr. Leland I Anderson
[illegible] Avenue South
Minneapolis 10 Minnesota.

Dear Mr Anderson,

Glad to have received your letter of Sept 7th. but sorry to hear that you are encountering some difficulties in obtaining early records of Mr Tesla's turbine activities.

I have all the records of what transpired which I kept during my experiences with Mr Tesla and if you or any of your associates visit Florida I would be glad to spend some time explaining my records.

I am enclosing a drawing I just finished which always appeared to have merit . I believe this is one of the idea that Mr Tesla had where a model was made and tested.

It is a (Or I called it) a Valveless Conduit to be used as a valve where mechanical valves could not open or close without hammering themselves to powder at high speeds (up in the thousands per minute) We made a model as described on the print and had a glass on one side so when we had an explosion we could see smoke passing through the track and getting mixed up in the eddy current which convinced us that we were getting back pressure.

This experiment was never conducted to a conclusion as the work was stopped but the idea to me had some merit and I know that this tracing is the only record.

Mr Tesla was not only interested in a hot blast of gasses hitting the Turbine wheel like the expanding gasses from a blow torch ,but he also wanted to get a real explosion and the gasses hitting the turbine wheel and having fresh air entering the explosion chamber to scavengthe burned gasses and have a more economical product. He always talked of traveling from coast to coast on a tank full of gasoline.

Sincerely,

John C. Whitesell

J.C. Whitesell.

PS. If you make prints from the tracing will you please return the tracing to me.

Thanks

Apr. 25 1921. Compliments from Nikola Tesla

[illegible], [illegible] Judge [illegible] (in a decision upholding [illegible] [illegible] [illegible] of the [illegible] of [illegible] to capture the unruly, unrestrained and hitherto opposing elements in the field of nature and art and to harness them to draw the machines of man. It was he who first [illegible] to transform the toy of [illegible] into an engine of power, the laboratory [illegible] of [illegible] into a practical motor, the indicator into a driver. He first conceived the idea that the very impediments of reversal in direction, the contradictions of alternations might be transformed into power-producing [illegible], a whirling field of force. [illegible] [illegible] invincible [illegible] and [illegible] [illegible] [illegible] [illegible] [illegible] in practical [illegible] [illegible], the power of

[illegible], American Institute of Electrical Engineers [illegible] of history, it is [illegible] [illegible] have been [illegible] in [illegible] electrical engineering practice.

B. [illegible] Professor [illegible] [illegible] [illegible] of [illegible] in [illegible] wonderful in its importance and [illegible] in the [illegible] [illegible] since the appearance of [illegible]'s [illegible] in Electricity has a great experimental truth been voiced so simply and so clearly as the description of [illegible] great discovery of the [illegible] of polyphase alternating currents. He left nothing to be done for those who followed him. His [illegible] contained the [illegible] even of the mathematical theory. [illegible] we to seize

[illegible] Townsend, Circuit Judge (in a decision upholding Tesla fundamental patents): "It remained for the genius of Tesla to capture the unruly, unrestrained and hitherto opposing elements in the field of nature and art and to harness them to drive the machines of man. It was he who first showed how to transform the toy of Arago into an engine of power, the laboratory experiment of Bailey into a practically successful motor, the indicator into a driver. He first conceived the idea that the very impediments of reversal in direction, the contradictions of alternations might be transformed into power-producing rotations, a whirling field of force. What others looked upon as invincible barriers, impassable currents and contradictory forces, he seized, and by harmonizing their directions utilized in practical motors, in distant cities, the power of Niagara."

C. F. Scott, President, American Institute of Electrical Engineers: "As a matter of history, it is the Tesla principle and the Tesla system which have been the directing force in modern electrical engineering practice."

B. A. Behrend, Chief Engineer and author: "The genius of Tesla has been instrumental in stimulating, if not in creating a wonderful industry, wonderful in magnitude and wonderful in the humanity of its conception. -- Not since the appearance of Faraday's researches in electricity has a great experimental truth been voiced so simply and so clearly, as the description of Mr. Tesla's great discovery of the generation and utilization of polyphase alternating currents. He left nothing to be done for those who followed him. His paper contained the skeleton even of the mathematical theory. -- [illegible] to seize

and to eliminate from our industrial world the [illegible] of [illegible] coal's [illegible], the wheels of industry would stand still [illegible] our electric cars and trains would stop, our lamps would go dark, our mills would be dead as [illegible]. Yet, as far reaching as this force, that it has become the warp and woof of industry. -- [illegible] an event in the advance of electrical science. From [illegible] work has sprung a revolution in the electric l art.'

Lord Kelvin (before [illegible] 'acoustics something upon a [illegible] [illegible] [illegible]): 'This is a wonderful revelation of the induction coil and destined to be of great importance.'

Sir William Crookes: 'The performance of the machine is marvelous.'

'Nature' London: Mr. Silvanus Thompson exhibited a Tesla oscillator. He concluded [illegible] Tesla on the perfect working [illegible] of his machine.'

'Electrical Review' New York: Mr. Tesla comes [illegible] with perfected and extremely simple oscillators. We believe that the [illegible] of the advent of [illegible] for the advancement of science and industry can not be overestimated.'

F. B. Kennelly, American Engineer, Author, Professor at Harvard University: [illegible] of the award of the Edison Medal: 'The medallist is the man who devised the rotating magnetic field -- that set wheels turning round all over the land and all over the world -- and who made the phenomena of light fire a boy's brain -- and who should be a revelation to science and art until all time.'

H. W. Buck, Chief Engineer, [illegible] of the various inventions of Nikola Tesla [illegible]: 'The great conception of the rotating field seems to me one of the greatest facts of invention.

[illegible] which has ever been attained by [illegible] with. From his work followed the [illegible] of Roentgen, who discovered the [illegible] rays, and all that work which has been carried on throughout the world in following the [illegible] by J. J. Thomson and others which [illegible] reveals led to the development of modern physics. His work [illegible] that of Lorentz and formed the basis of wireless telegraphy, which is one of the most scientific [illegible] and to on throughout the [illegible] of science was in the prime of the present day."

[illegible] Stone Stone, wireless expert, author, in reviewing the work of Lodge, Crookes, Thomson and others: "Among all these, the [illegible] of Hertz [illegible] out most [illegible] prematurely. [illegible] with his [illegible] correct phenomena which [illegible] some years before to reveal the [illegible] of electric power transmission through the invention of the rotary field motor, knew how to make resonance serve, not merely the role of a microscope, to make visible the electric oscillations, as Hertz had done, but he made it serve the role of a stereopticon -- he did more to excite the [illegible] and create an intelligent understanding of these phenomena -- than any one else -- and it has been difficult to [illegible] any out [illegible] telegraphy without travelling, part of the way at least, along a trail blazed by this pioneer who, though extremely ingenious, practical and [illegible] in the approach he devised and demonstrated, was so far ahead of his time that the best of us then mistook him for a dreamer."

Privy Councillor Prof. A. Slaby, leading German authority in a letter to [illegible]: "I am devoting myself since some time to investigations in [illegible] telegraphy, which [illegible] have [illegible] in about [illegible] author. It will interest you as father of this telegraphy to know, etc.

lectrical review (commenting upon the wireless): "Mr. Tesla's researches in this field have attracted world-wide attention and his is undoubtedly the greater mind."

[illegible] Cirvdeau, Leading French expert and author: "On the [illegible] September, 1897, Nikola Tesla, the American electrical engineer, applied for patent protection on a system of transmission of electrical energy without wires (patent No. [illegible]). ..... This is the same engineer who [illegible] wireless telegraphy in 1893. [illegible] ..... Indeed, [illegible] patent extraordinary [illegible] precision, surprising even to [illegible] considering that we obtained [illegible] in regard to which years later, so that in [illegible] world [illegible] him and [illegible] to [illegible] physicists like a visionary. Later, when it was recognized that the application of [illegible] to wireless telegraphy was a capital invention, a number of detractors became interested [illegible] the work of Tesla -- it is Tesla who is the true inventor of wireless telegraphy .... and it is certain that [illegible] will cease to detract from his merit by the objection that to have left to others the trouble of profiting from financial results of enterprises based on his inventions ..... that cruel injustice would it not be to try to stifle the pure glory of Tesla in consoling him sorrowfully with the present reputation of those who had the venue to be understood by the inventor..."

Dr. L. [illegible] Austin, Leading Government expert of the United States (referring to Mr. Tesla's work): "I consider him the father of wireless.... His lectures in the early nineties contain full description of a wireless system [illegible] to actually had in practice before long."

"Der Electro-technische Anzeiger" Jerrin, [illegible] Elektricitat Leipzig (commenting upon Tesla's work): "It

is a combination of the [illegible] of the [illegible] technic[illegible] [illegible] with the [illegible] vivid imagination [illegible] never before manifested itself in the human mind."

Electrical Review (London): "Concerning upon Tesla's [illegible] we believe that the [illegible] of the [illegible] and [illegible] will be such as to [illegible] it on [illegible] advance the civilization of mankind."

C. J. Richards, Professor Emeritus of [illegible]: "We [illegible] by the [illegible] turbine and [illegible] by the exhibit."

H. Sargent, Chief Engineer and Turbine Expert: "[illegible] with the [illegible] power of the [illegible] principle of this [illegible] It is such as will claim the [illegible] of anyone of [illegible] scientific turn of mind in a mechanical direction."

Reynold Janney, Chief Engineer, Universal Transmission Co: "It is a great invention."

Brigadier Allen of the Air Department: "Something new in the world. Officers are greatly impressed with it."

Miller Reese Hutchinson, Chief Engineer: "It is the greatest invention of the age."

Arnold Irinyi, Chief Engineer, Gelfeuerungs-Gesellschaft, Germany: "It is the ideal gas turbine."

The Motor World: "The new principle unquestionably is a great contribution to [illegible] engineering, great in its simplicity and breadth of application."

R. [illegible] T. Collins (Power Plant Economist): "It is a wonderful turbine."

Scientific American: "Considered from the mechanical viewpoint, the turbine is [illegible] and economical in [illegible] should prove to possess such [illegible] durability and freedom from

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

February 28. 1930

My very dear Luke:

[illegible]

[illegible]

[illegible]

Hotel Pennsylvania N.Y.
January 31. 1910.

My dear Luka,

This is to acknowledge receipt of Two Hundred Dollars ($200) which I promise to return within three weeks.

My former private secretary, now Auditor of the Union Sulphur Co., George Scherff, is familiar with all my affairs and in the position to make the best of my interests and particularly should anything happen to me. He is a man of very rare intelligence and business ability, a loyal friend and a perfect gentleman.

But you are my best friend and I hope that I shall soon have an opportunity to show you how much I have appreciated your many kindnesses.

As ever yours sincerely
N. Tesla

R. U. Johnson Esq.
327 Lexington Ave, N.Y.

HOTEL PENNSYLVANIA
NEW YORK

July 31, 1940.

My very dear Duke:

Sorry I could not meet you Saturday. May the Lord reward you for your Samaritan deeds with a long and happy life — longer than Methuselah's long age!

Loving you

Frances

Duke Aldo
Ex 156 Vin 22
Trust

[illegible]

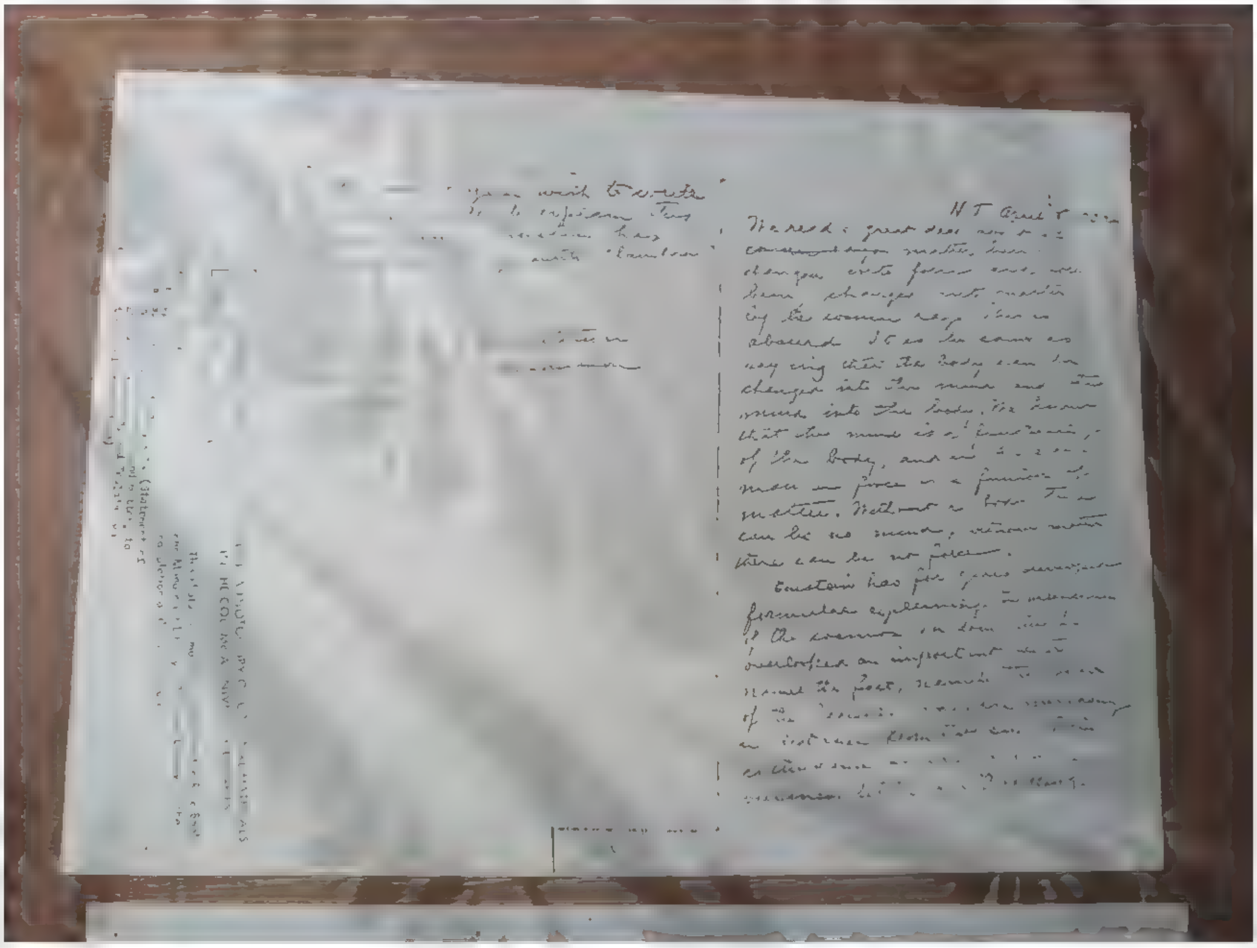
[illegible]

[illegible]

Thank heaven I [illegible] your [illegible]
[illegible] the inclosed. May you
[illegible] the [illegible]
[illegible] I am [illegible]
you that I forgive you [illegible]
such a [illegible] [illegible]
his advocates for [illegible]
[illegible]

[illegible]

Mr. R. U. Johnson Esq.
7 East 43 Street
N. Y.



[illegible] you wish to write [illegible] to explain [illegible] has [illegible] with Einstein [illegible]

N T [illegible]

To read a great deal now [illegible] ~~[illegible]~~ matter, being changed into force and [illegible] force changed into matter by the common [illegible] is as absurd. It is the same as saying that the body can be changed into the mind and the mind into the body. We know that the mind is a function of the body, and [illegible] much as force is a function of matter. Without a body there can be no mind; without matter there can be no force.

Einstein has for years [illegible] formulae explaining [illegible] of the [illegible] overlooked an important [illegible] named the fact, namely [illegible] of the [illegible] in [illegible] [illegible]

the subject you wish to write about, in order to explain this phenomenon. Einstein has invented the phrase "Lorentzian"

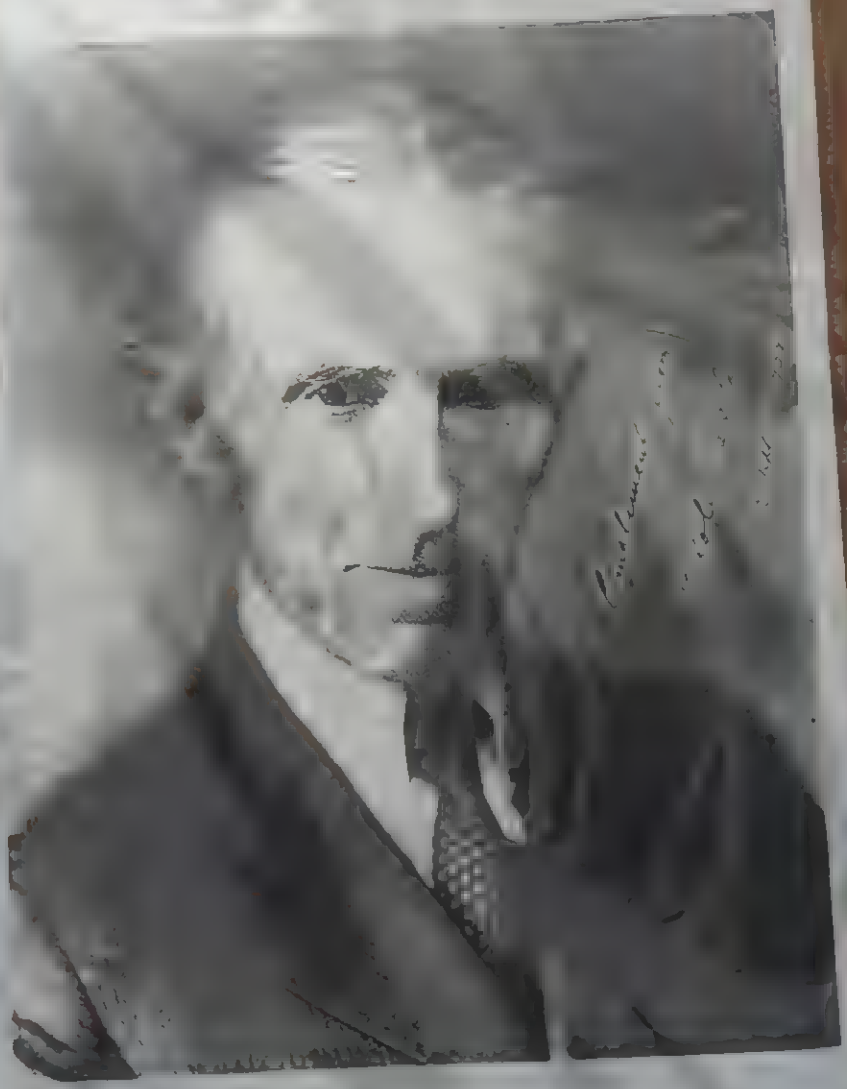
My theory of gravitation explains this phenomenon perfectly.

N.Y. April 18 1932

We need a great deal about the ~~[illegible]~~ matter been changed into force and force being changed into matter by the cosmic rays. This is absurd. It is like some saying that the body can be changed into the mind, and the mind into the body. We know that the mind is a function of the body, and that [illegible] is a function of matter. Without a body there can be no mind, without matter there can be no force.

Einstein has for years developed formulae explaining the interchange of the cosmos. In doing this he overlooked an important fact, namely that mass of the Periodic [illegible] increasing in distance from [illegible]. This is the same as [illegible] the [illegible] letter [illegible]

1934




Compliments from
Nikola Tesla
New York Sept. 5. 1934

[illegible] [illegible]

[illegible] [illegible] 28 1914

F. S. Pinnock Esq

(care) Prof. [illegible]

New York

Dear Mr. Pinnock,

Your letter of the [illegible] and [illegible] just with draft of [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]


HOTEL NEW YORKER


HOTEL
NEW YORKER
Hotel New Yorker
34TH STREET AT EIGHTH AVENUE
NEW YORK

back and was unable to
answer promptly.

If you [illegible] only [illegible]
but you did not get suffi-
cient information and some
slight changes will be necessary
to make the statement now are
ditable to both of us and [illegible]
[illegible]. Perhaps the fac-
simile of my book, as reflected
in the enclosed article and

I shall be very glad,

PHILIP FITZHUGH STRYKER
4004 BEECHER STREET N. W.
WASHINGTON 7 D. C.

ORIGINAL LETTERS, DOCUMENTS & MANUSCRIPTS
OF HISTORICAL AND LITERARY INTEREST

FEL.ERA 6 2 84

[illegible] 1, 1[illegible]

Dear Mr. Anderson:

Your splendid article on the papers of Nikola Tesla came to my mind this afternoon when, in going through a collection of minor autograph material, I discovered a little note of George Sylvester Viereck. It is so very minor that I'm almost embarrassed to send it to you, but you might find it of some interest.

Best wishes for the New Year.

Sincerely yours,

Philip Fitzhugh Stryker

Mr. Leland I. Anderson
1615 East River Terrace
Minneapolis 14, Minnesota

Enclosure. L.S. 4to G.S. Viereck
October 3, 1934, to Arthur Lenwal of
the Liberty Magazine.

now.

January 19, 1963

Philip Fitzhugh Stryker
4[illegible] Beecher Street, N.W.
Washington 7, D. C.

Dear Mr. Stryker:

Thank you very much for the L S [illegible] of George Sylvester Viereck which mentions Tesla and which you were so [illegible] thoughtful in sending to me. Thanks, [illegible], for your kind words about my short piece in Manuscripts. [illegible] was indeed one of those dedicated savants of whom the lay public knows so comparatively little.

Very truly yours,

GEORGE SYRENSKY AGENCY
[illegible] WEST [illegible] STREET, NEW YORK

[illegible]

[illegible]

[illegible]

Hotel Van Rensselaer
New York October 8. 1930

F. S. Barnes Esq.
Eng. West 121 Street
New York

Dear Sir & Friend:

Thanks for your fine [illegible]
and welcome. I wish I could be more
pleased to see

The Liberty people are
good discriminators. Any magazine
editor should be glad to get an

Hotel New Yorker
November 4. 1934.

G. S. Viereck Esq.
627 West 113 Street
New York.

My dear Mr. Viereck:

Your poems have almost stunned me, otherwise I would have thanked you before this for the book.

You are a poet of the first

order partaking of the genius of Goethe, Heine, Bürger, Byron, Poe and other classics - a combination productive of wonderful results. Your range is from a delicate touch to the destructive blow of a sledgehammer and you can project yourself through time and space as no other.

"I hunted thee were the Isis rode
From the Brocken's crag to the lip Tiber"

Be it due to the fascination of mythical figures of beauty and power or

is a rare quality you possess, your words are like a magic carpet transporting the reader to distant places with the speed of thought.

Were it not for your masterful expression, some of your poems would be horrible. But in your case one is tempted to say: "do it again and all will be forgiven."

What is it that prompts you to mislead the world in regard to your status in an unspeakable place

of human activity? You are a
sinner but only in your conceptions.
Your loves and misdeeds are wholly
imaginary. You were never a Don
Juan but rather a tireless rooster
pressing himself.

Sincerely yours

N. Tesla

Hotel New Yorker

New York Nov 21-1935.

G. S. Viereck Esq.

Esq. [illegible]

My dear Viereck:

Referring to your letter of the [illegible] inst. I have your manuscript from "The Parade" before and have suggested to Lou [illegible] for which [illegible] you [illegible] together if you want to write [illegible] independently.

Neither can both be delivered, we can do the [illegible] matter. But the statement must be qualified.

[illegible] force on the result of the action of [illegible], if all action were to stop, given [illegible] would disappear.

[illegible] dwelt on the position of indi- [illegible] individuality. [illegible] I [illegible] [illegible] I proposed [illegible] the truth of experiment. The idea was to take a chemical combination of atoms A and B, separate these constituents and then put them in the presence of an atom C from another source but otherwise the same as B. Now, if it be found that A will invariably combine with B, [illegible] of any

[illegible] "the terrific mother" begot from "[illegible] Eternity" as universe of form and order, [illegible] no change in the quantity of matter provided that [illegible] also [illegible] the other. [illegible] the learning in philosophical works we [illegible] to things perceptible and the above [illegible] learned scientific theory is false, for gross matter is ever changing in amount being continuously produced from ether and again dissolved into the same. In the [illegible] the entire [illegible] amount of ether which can not be created or destroyed, and consequently, remaining eternally constant in quantity. I have made a discovery of a wonderful importance in this [illegible]

[illegible] it is striking experiments.
One of its many consequences is mentioned in
the [illegible] paragraph of [illegible] article.

The Newton was [illegible] in his [illegible]
[illegible] that the [illegible] and the Rays were
[illegible] discarded the active medium indispen-
sable to the Newtonian interpretation of the
[illegible]. They have even stressed so — [illegible]
[illegible] would [illegible] — the
interchangeability of matter and [illegible]. This
is the [illegible] meaning of [illegible]. [illegible]
[illegible] saying that the body can be [illegible]
[illegible] the seat of [illegible]. The [illegible]
is [illegible] the [illegible] expression of the justifica-
tion of the [illegible] and [illegible] — [illegible]: [illegible]

will be swayed by hope and fear, but the time may come when individual consciousness will be completely eliminated and replaced by a consciousness of the whole. Then our tortures will be ended and we shall [illegible] the [illegible] [illegible] of [illegible] [illegible] [illegible] [illegible] and [illegible] [illegible] to [illegible] [illegible] complete and [illegible] [illegible] [illegible]. Your life will be begun and [illegible] [illegible] [illegible]

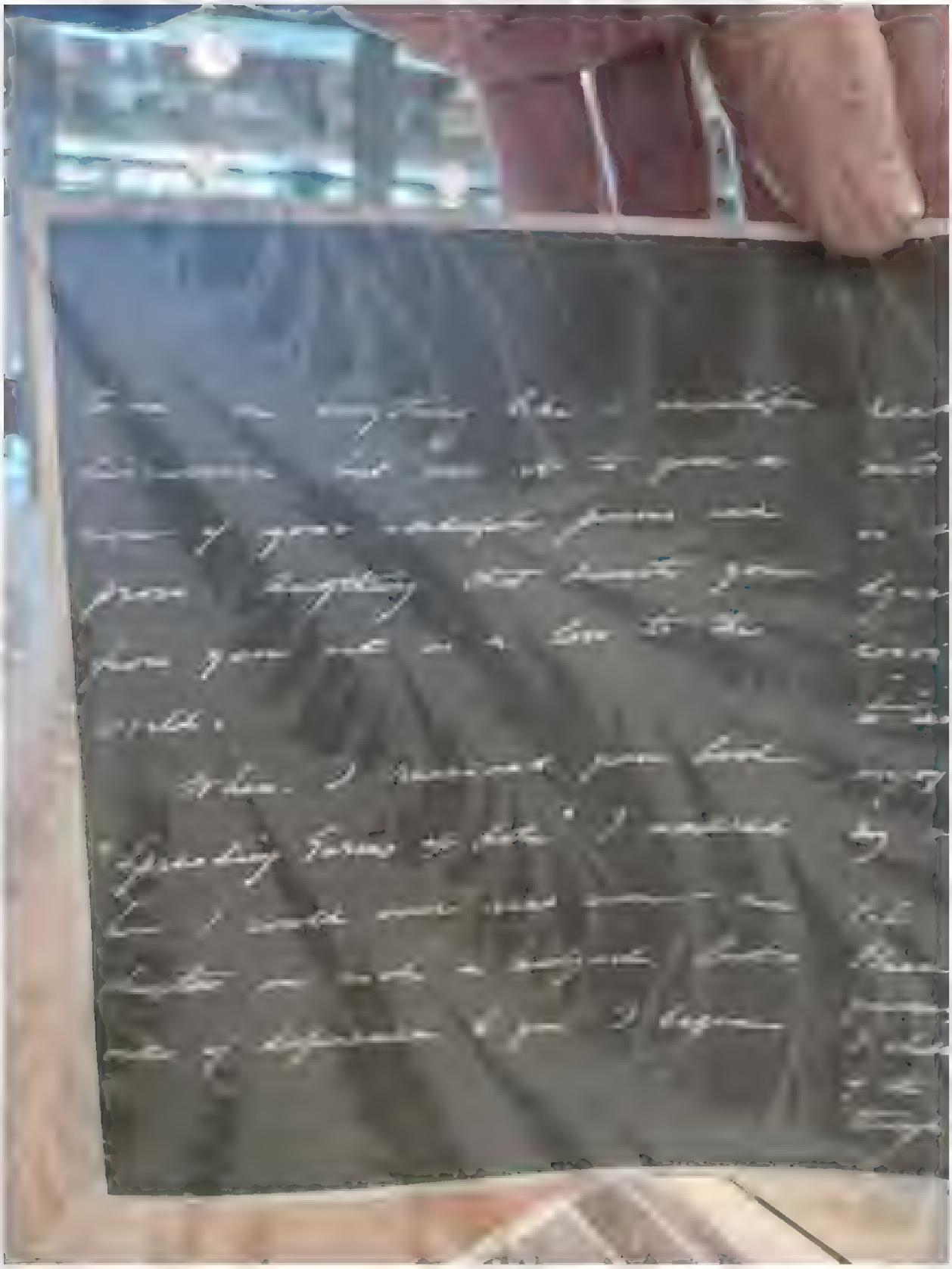
[illegible]

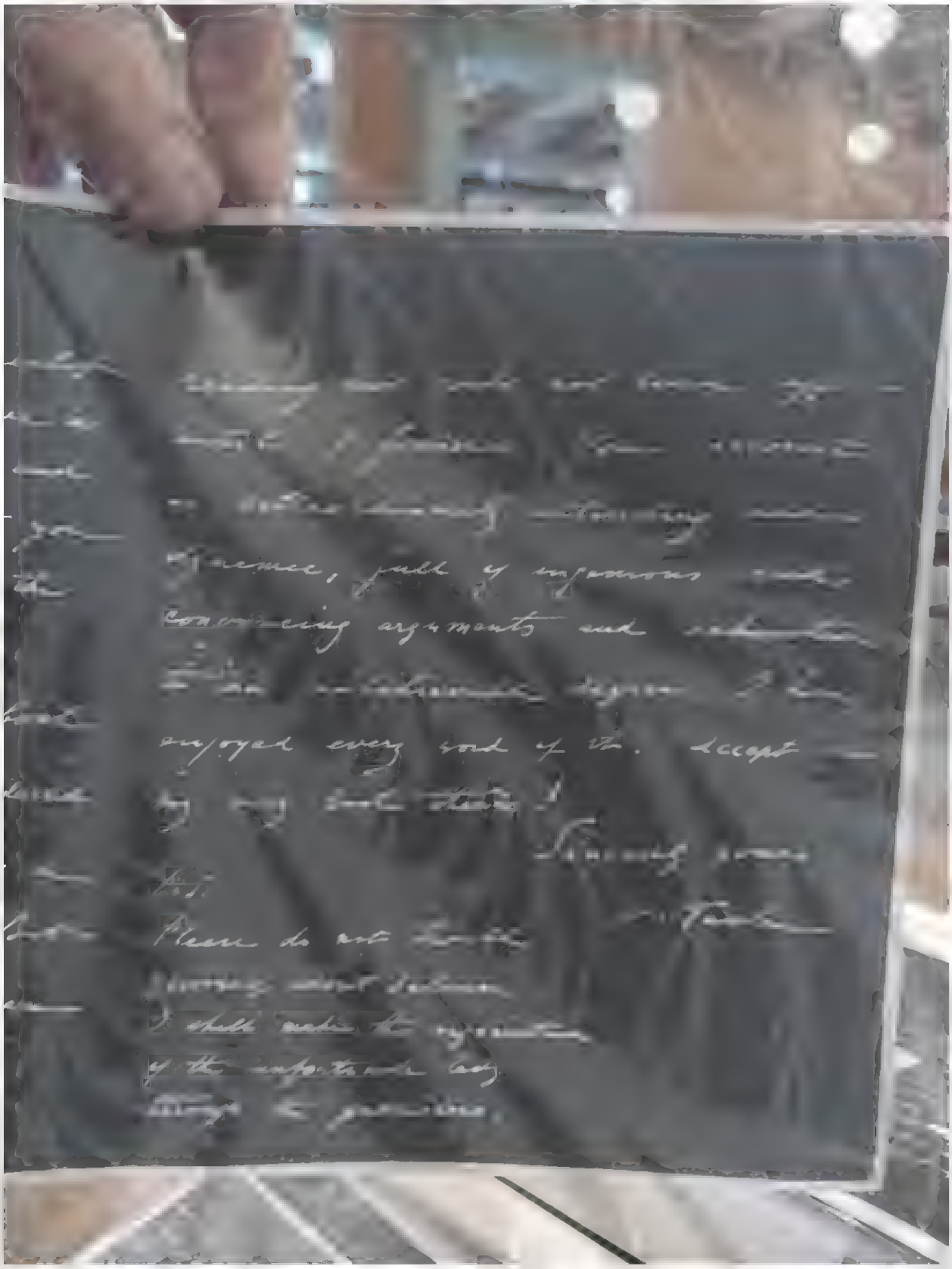
head of organic or inorganic body or
[illegible] sketche that the same combinations re-
[illegible]. My experimental skill was wo-
fully [illegible] [illegible]
have left its carrying out to others

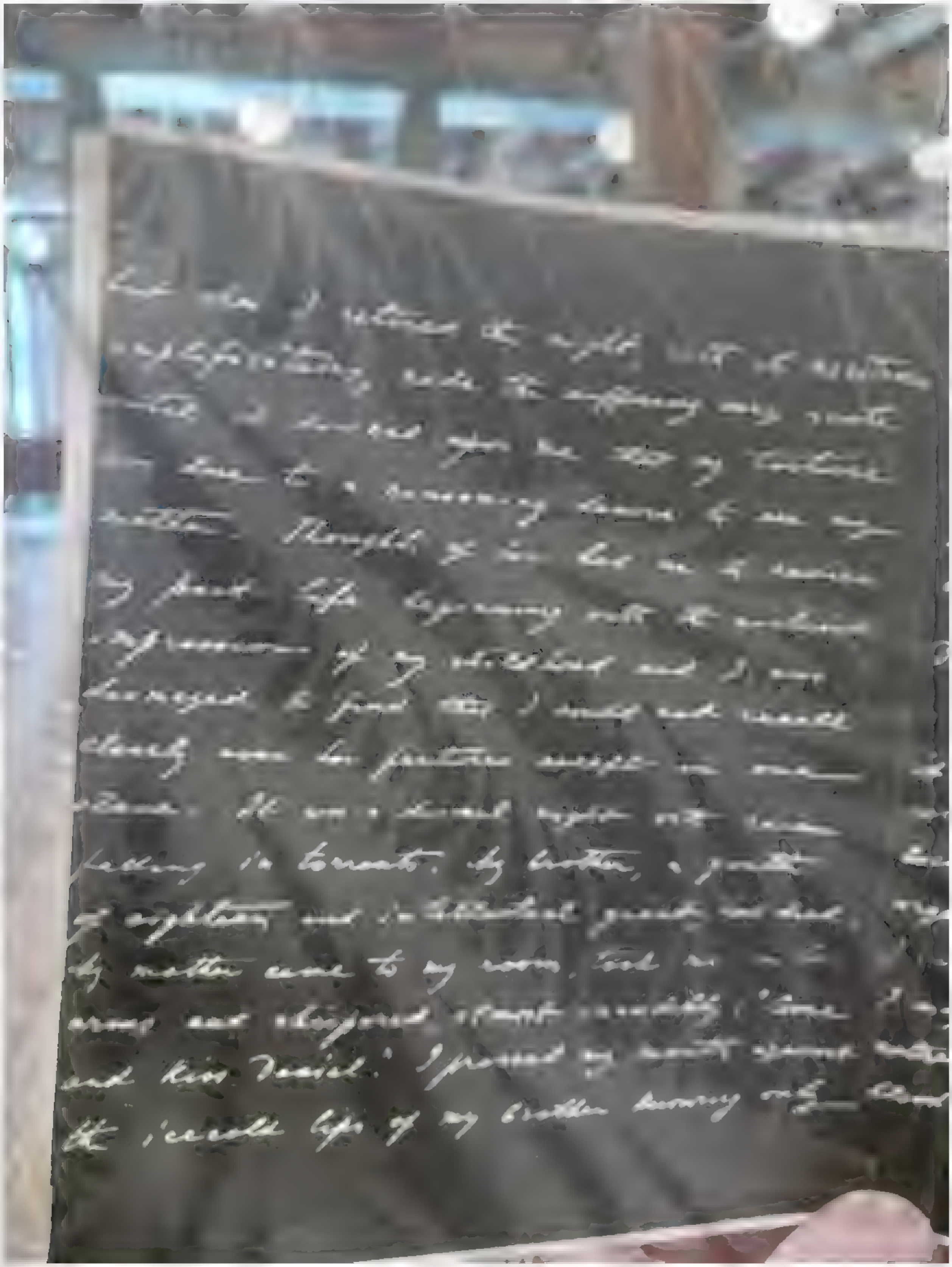
The desire for continued existence,
which has tormented humanity from its
very beginnings, can be traced to the mo-
mentum of the elementary masses compo-
sing the human body and whirling at
prodigious speeds. The urge felt is a

physical reality comparable to the sensation of weight, but individually an illusion. This is the basis of all [illegible] to grasp for it is, [illegible], [illegible] created by many [illegible] of the same [illegible] that they [illegible] to be [illegible] nothing more than a mirage. You are not Vierech but a succession of different [illegible], a transcripts [illegible] through time and space to its inevitable dissolution. You live as [illegible], [illegible] the [illegible], but there is [illegible] [illegible] record of past events in your brain. [illegible] You are only a wonderfully [illegible]

[illegible] — [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible]
[illegible] & external circumstances [illegible]
[illegible] straight and [illegible] from fellow beings
[illegible] are accordance in many respects [illegible] [illegible]
[illegible] according in the same manner [illegible] & identical
[illegible] influences and the close correspondence
[illegible] of the laws of the [illegible] material
[illegible] understanding and reason. So the mind
through [illegible] of man is a [illegible] [illegible]
[illegible] through his own instincts, for there is
[illegible] no free will — but through the irre-
[illegible] [illegible] [illegible] of external forces. To
[illegible] come get to know every [illegible] [illegible]
[illegible]




Please do not
I shall make the
of the important only
things I consider.

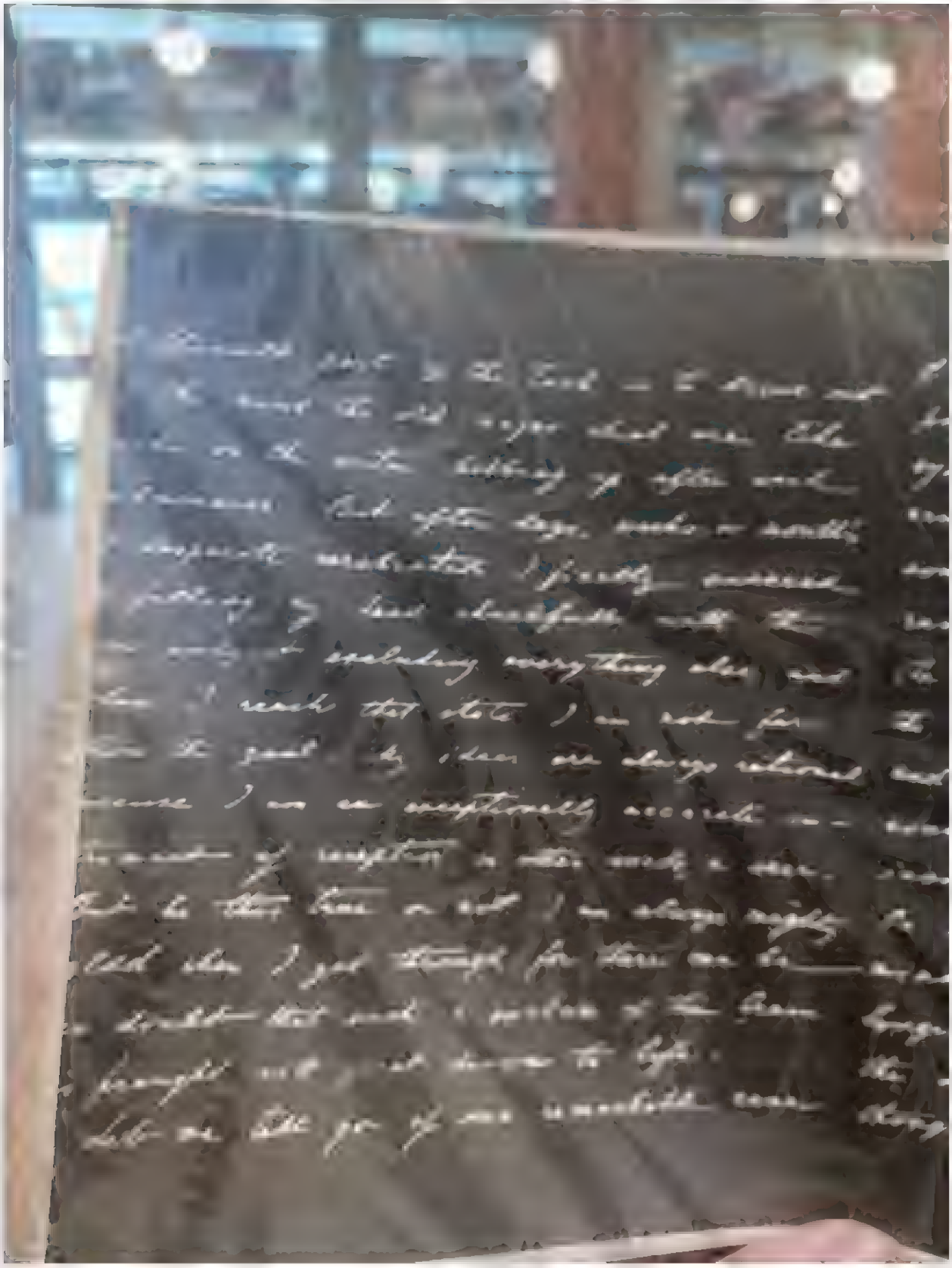


But when I retrace the mighty [illegible] of [illegible]
unsatisfactory [illegible] the sufferings only [illegible]
which I [illegible] upon the [illegible] of [illegible]
[illegible] due to a [illegible] [illegible] of [illegible] my
[illegible]. Though I [illegible]
my past life beginning with the earliest
impressions of my childhood and I [illegible]
[illegible] to find that I could not recall
clearly even the faintest [illegible] in [illegible]
[illegible]. It was a [illegible] night with rain
falling in torrents. My brother, a youth
of eighteen and intellectual genius, had died.
My mother came to my room, took me in her
arms and whispered almost [illegible], 'Come, [illegible]
and kiss Daniel.' I pressed my [illegible] against [illegible]
the icecold lips of my brother [illegible] only [illegible]

Hotel Sherman
New York December 17. 1937

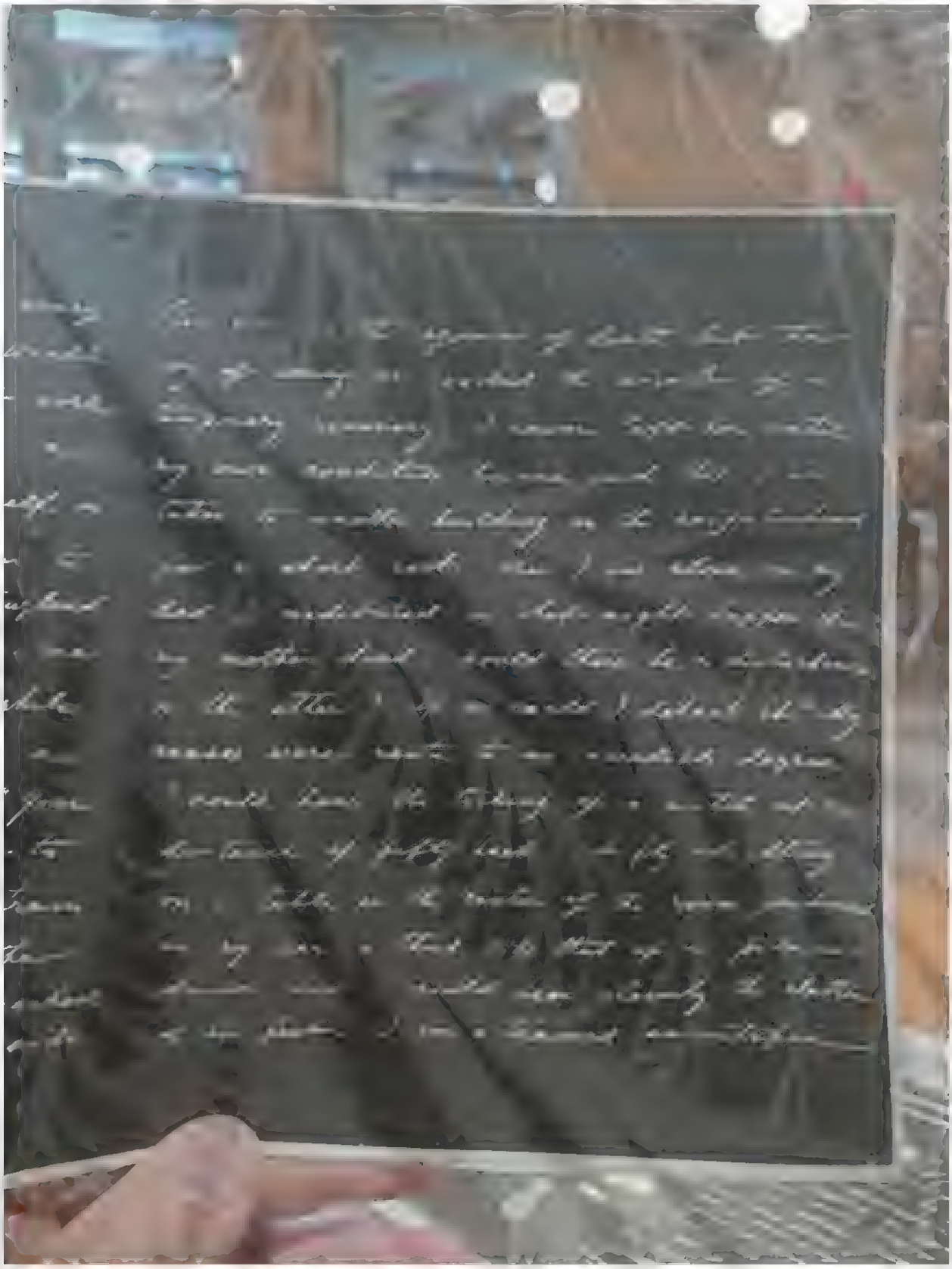
E. H. Friedrich Esq.
Dear Friedrich:

My capacities are limited and sometimes it happens that I am baffled in my efforts to solve the problem confronting me. It then becomes a question of life and death for the urge to find a solution is so great that I can not overcome it no matter how hard I may try. Inevitably, I am driven to extreme concentration at the point of a blood clot or atrophy in the brain. The more



I this kind which may interest you as
psychologist. Years ago, after evolving my
system of wireless transmission of energy, I
came to the conclusion that to put it on a
sound scientific foundation I had to
locate the electrical system of the earth.
The task seemed almost impossible, but I had
the boldness of ignorance to undertake it
and passed several months in hot velocity,
sometimes feverishly, pushing to a
complete idea I was at the point of despair
when by slow steps to the normal state of
mind I experienced an exquisitely peaceful
feeling after something indefinable. During
the day I worked as usual and the feeling,
though it persisted, was much less pronounced.

[illegible] of my lectures before leaving and while
doing this a messenger handed me a
telegram from my uncle which read "[illegible]
[illegible] by my [illegible] if you [illegible]
[illegible] be there" I hurried for the train
and after a two days journey on the
[illegible] of headache upon I reached home
[illegible] and [illegible] by [illegible]



[illegible]

[illegible] of the [illegible]

[illegible] of the [illegible]

[illegible] discovery. I

[illegible] of [illegible] stage and with

[illegible] of the [illegible] and

[illegible] of the right, I watched [illegible]

[illegible] passing [illegible] in the

[illegible] and the

[illegible] with a step [illegible]

[illegible] I saw [illegible] an [illegible]

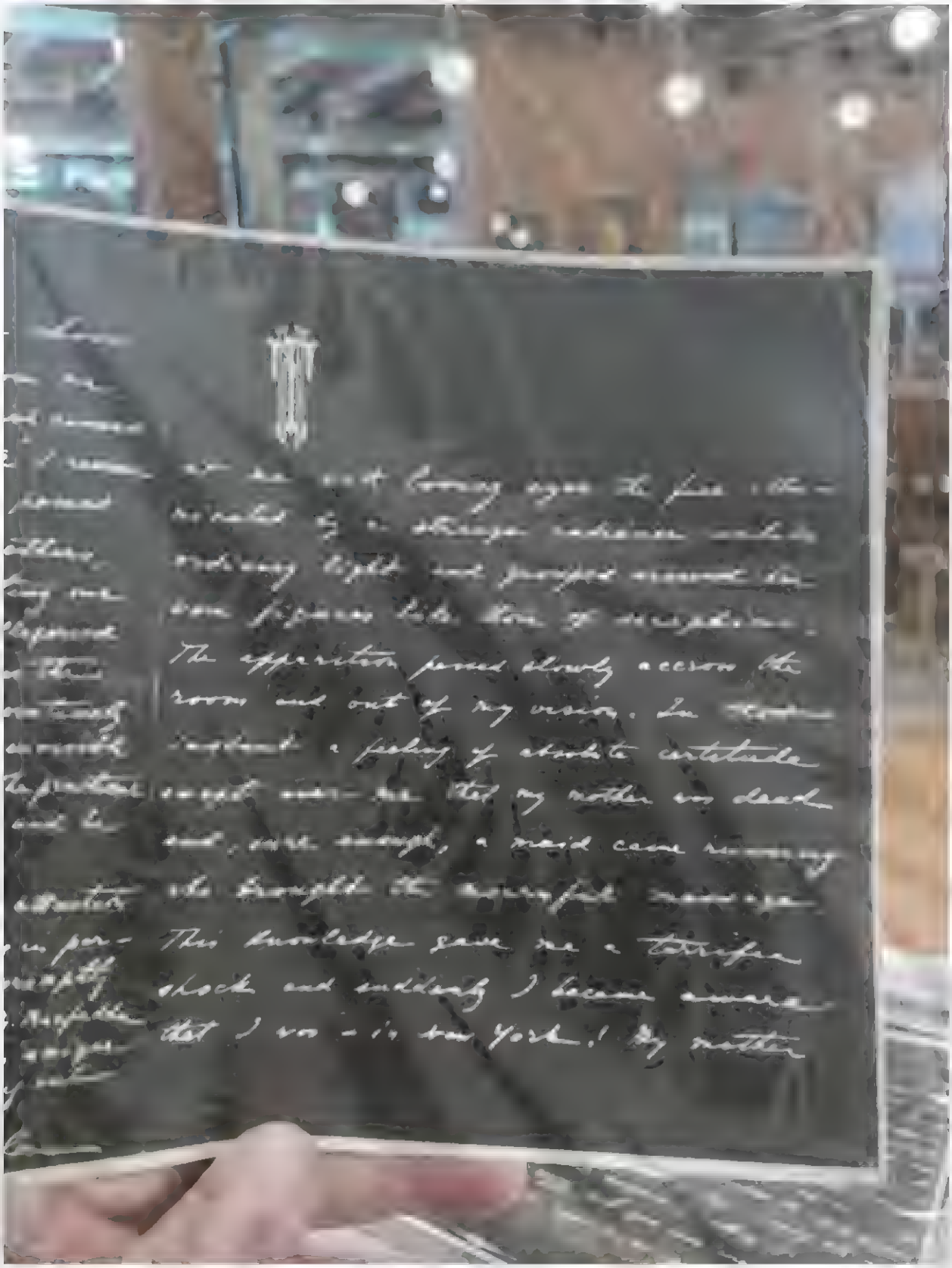
[illegible] by [illegible] of [illegible]

[illegible] the [illegible] of

[illegible] by [illegible] on [illegible]

[illegible] some long [illegible] had happened to
[illegible], but as years to bed and lingering
a little [illegible] the [illegible] morning I had gone
to one at midnight and at midnight he
took away the other one". This remembrance
was [illegible] as usual in the [illegible] hypnotic
state by some strange phenomena of the brain
in the middle of [illegible]. By [illegible],
came slowly growing in clearness and after
weeks of thinking the image appeared sharply
defined and in a fullness of light which
astonished me. Concerning more and more
of my past life I came to realize by [illegible]
[illegible] experiences. [illegible] the [illegible] by [illegible]

[illegible] yesterday [illegible] a [illegible]
[illegible] a [illegible] [illegible]
[illegible] [illegible] [illegible]
[illegible] [illegible] [illegible]
[illegible]



[illegible] coming upon the face, the-
revealed by a strange radiance which
[illegible] light and proceed around the
[illegible] form of a [illegible].
The apparition passed slowly across the
room and out of my vision. In [illegible]
instant a feeling of absolute certitude
swept over me. Tell my mother was dead
and, sure enough, a maid came running
to bring the [illegible]
This knowledge gave me a terrifying
shock and suddenly I became aware
that I was in New York! My mother

[illegible] years before but I had forgotten
[illegible] how could this happen? I [illegible] myself
[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
particular department of my consciousness.

At the time the events related actually
took place I was in a [illegible] state
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]

"lost" I am nothing more than an automaton responding to external stimuli and passing through an infinite [illegible] of [illegible] existence from the cradle to the grave.

The application of this mental phenomenon, after all, very simple. Through long concentration on a personal subject which failure in my [illegible], for want of [illegible] and [illegible], were hampered and could no longer respond properly to outside influences. With the cessation of my thoughts they were gradually unwinded and finally brought back to their normal condition. I am desirous to see my mental [illegible] due to my examination of some extraneous forces known by himself which had awakened in me hidden memories shortly before I began to concentrate. I heard the music because my

2016 N. W. 27th. Street
Gainesville, Florida. 32605
Feb. 13, 1977

Dear Mr. Ratzlaff:

Sorry for the delay in answering your letter but lately I have had so many many speaking engagements I have not had the time even for my lab.

You may certainly use my photographs in your book with credit. Please be sure and send me a copy when it is published - also the bibliography.

The oval portrait is of Angelina Trbojevic (Tesla) Tesla's oldest sister born in Senj.

The one with the broad forehead is of Milka Qlunichic Tesla's second oldest sister born in Senj.

The last with the buttons on her dress is Marica Kocanovic or Kosanovich (Tesla(his youngest sister born in Smiljan like Tesla.

DANE

Dane his oldest brother apparently died from a fall down cellar stairs when he was 12 years old (no photographs of him or the mother. He was born in Senj).

Some have said that before he lost consciousness and in delirium he accused Tesla of pushing him. He died later from the head injury - probably a hematoma. Whether the story of Tesla pushing his brother in a boyish scuffle is true or not I do not know.

Marica's son Sava N. Kosanovich later became Minister of State for Yugoslavia. Marica was also a very good mathematician like Tesla.

I hope I have been some help. Use this letter as permission to use my photographs with credit.

Sincerely,

Philip S. Callahan

LETTERS TESLA, NIKOLA - 1934, DECEMBER 17

OBJECT	Letter	ACC. NO.	67.64.2 A-B-C
COUNTRY	United States	NEG. NO.	
	New York, New York	MATERIAL	
DATE	December 17, 1934	MAKER	
DIMENSIONS:	L. 6 3/4" W. 5 3/8"		

DESCRIPTION: 12 page (3 sheets) Holograph signed letter from Nikola Tesla (American electrical inventor) written in the Hotel New Yorker and addressed to G.S. Viereck, psychologist. telling him about a strange dream experience concerning Tesla' mother; the letter concludes by saying he would be delighted to m Mr. Macfadden (Bernarr).

REMARKS: Letter paper contains Tesla's monogram.

SOURCE: Purchased from: Goodspeed's Book Shop, Inc.

LOCATION :Library

REV. W. C. NEVILS, EDUCATOR, WAS 77

Ex-President of Georgetown and Jesuit 59 Years Dies —Led U. of Scranton

The Rev. William Coleman Nevils [illegible] educator [illegible] Philadelphia [illegible] Hospital [illegible] years old.

Father Nevils had been a member of the Society of Jesus [illegible] fifty-five years. For the last [illegible] seven years he had been [illegible] superior, holding various [illegible] administrative posts. He was [illegible] with coronary thrombosis [illegible] months ago and suffered a new attack last Saturday. He remained in a coma [illegible] death.

William Coleman Nevils was born in Philadelphia on May 29 [illegible] son of Andrew P. and [illegible] Coleman Nevils. After [illegible] and classical studies at St. Joseph's College there, he entered the Society of Jesus in [illegible]. Father Nevils took philosophical studies at Woodstock College in Maryland. He taught Latin and Greek at Boston College High School in Boston and Loyola High School here from 1903 to 1908.

Ordained in 1911

Returning to Woodstock College for theological studies he was ordained in 1911 and completed his clerical training at St. Andrew-on-Hudson in 1914.

After serving as Professor of Rhetoric at St. Andrew-on-Hudson and of philosophy at Holy Cross College Father Nevils joined the Georgetown faculty, teaching a lecture in sociology.

In 1918 he was named dean of the University, and chancellor the next year. He held the latter post until 1924. Father Nevils was named regent of the Georgetown School of Foreign Service in 1920, serving until his appointment as dean of Shadowbrook Jesuit House of Studies in 1924.

He returned to Georgetown in 1928 as president. During his seven-year term he became a well known figure in Washington. A [illegible] man with a [illegible] and cultivated mind and a rare gift for public speaking, he made [illegible] circles of friends who remembered him for his kindness and humility.

From Georgetown Father Nevils came to New York for a six-year period during which he was rector of Loyola and Regis High Schools and of St. Ignatius Church.

When the Jesuits took over the [illegible] and [illegible] of the Catholic College in Scranton, Pa., and transformed it into the University of Scranton in 1942 he was appointed the university's first president.

Campion House Superior

In 19[illegible] Father Nevils was [illegible]

HERMAN B. DELMAN, A SHOE DESIGNER, 60

Herman B. Delman noted shoe [illegible] died Saturday in his [illegible] at the Madison Hotel after a long illness. His age was 6[illegible].

Mr. Delman was also well-known as the owner of a successful [illegible] in Louisville. He was born in Poughkeepsie, N. Y., and went to school in Cincinnati. Orphaned when his family lost a small shoe store.

After service in the Marine Corps in World War I Mr. Delman opened a shoe shop on Madison Avenue with several craftsmen working in the window. The store attracted the attention of society and Mr. Delman became a leader in the shoe-design field.

About twenty years ago, Mr. Delman founded Dr. Farm near Louisville, Ky. Among his many [illegible], racehorses were Hot Roaring and Lady Dunstan. He retired as head of the Delman Shoe Company last year and went to live in Palm Beach, Fla.

Deaths

ADAMS—George Webster, on Oct. 12, 1955, [illegible] 80th year of [illegible] Helen Fritz Adams [illegible] P. Bakewell and Ann [illegible] Funeral Service in Christ Church [illegible] be added.

AGER—Jane Bergen, at Flushing, N. Y., on Wednesday, Oct. 12, 1955, wife of the late Charles Ager and sister of John T. Bergen [illegible] Funeral Home [illegible] Flushing, N. Y., on Saturday, Oct. 15, at 11 A. M. Interment [illegible] Cemetery.

BAER—Benjamin B., on Oct. 11, beloved husband of [illegible] S. Services on Thursday, Oct. 13, at 7 P. M. The Riverside, 96th St. and Amsterdam Ave.

BARR—Harriette Anna, [illegible] Memorial Chapel, 450 East 53d St., on Friday, 3 P. M. Services [illegible] Saturday.

BIRDELL—Mitchell, beloved husband of [illegible] Funeral Home, 1[illegible] Park Ave. [illegible] Saturday.

BRAND—Lange, [illegible] in Arlington, [illegible] 1955, [illegible] Charles E. [illegible] Church [illegible] 10 A. M.

BRIGGS—Frank R., on Oct. 12, [illegible] Funeral Home, [illegible] Ave. [illegible] Saturday, Oct. 14, at 10 A. M.

BROWN—Helen [illegible] Church [illegible] Ave. [illegible]

BRUNSON—Herman B., [illegible] Funeral Home, [illegible] Ave. [illegible] Saturday, Oct. 15, at 2 P. M. [illegible] Ave. [illegible]

Deaths

GOULDFIELD—[illegible] Oct. 12, [illegible] President [illegible] Ave. [illegible] Saturday, October [illegible] P. M. [illegible] Ave. [illegible]

HOBILL—Ella F., on Oct. 11, 1955, [illegible] Garden City, L. I., [illegible] Friday, October [illegible] P. M. [illegible] may be made [illegible]

JAMES—Grace H., beloved wife of Leon C. and [illegible] Mrs. [illegible] Funeral Home, [illegible] Ave. [illegible] Friday, October [illegible] P. M. [illegible] may be made [illegible]

JOSEPH—Joseph S., of the St. Regis, [illegible] Oct. 12, [illegible] 20th St. on Friday, 10 A. M. [illegible] Interment [illegible]

JOSEPHS—Joseph, [illegible] of the City of New York, [illegible] Funeral Home, [illegible] Ave. [illegible]

MAX S. WEIL [illegible]

KABATZNIK—Morris, [illegible] Ave. and [illegible] Family at home [illegible] West [illegible]

KAUFMANN—Henry J., [illegible]

KOCH—[illegible] Funeral Home, [illegible] Ave. [illegible]

KOCHMANN—[illegible] 38 Rue Ave. [illegible] Kochmann [illegible] Mountain [illegible]

KOHN—Samuel, beloved husband of [illegible] Funeral Home, [illegible] Ave. [illegible] Saturday, Oct. 15, at 2 P. M. [illegible]

KRAUTER—John F., 401 Macon St., [illegible] 1955, dear uncle of [illegible] Reposing at [illegible] Ave. Brooklyn [illegible]

KRAM—William, [illegible] Bertha Mae [illegible] Funeral Home, [illegible] Ave. [illegible] Sunday, Oct. 16, at 2 P. M. [illegible] Amsterdam [illegible] Flowers.

KRAM—William, [illegible] Lady [illegible] Sorrow [illegible] passing of the beloved [illegible] director, Irving Kram and extend [illegible] Employees [illegible] Lady [illegible]

KRAM—William, [illegible] of the directors, officers [illegible] director, Irving Kram and extend the deepest sympathy to the bereaved family. [illegible] Lady [illegible]

KRELENKOW—Joshua, [illegible] Mother devoted [illegible] Ave. [illegible]

Deaths

Adams, George W
Ayston Jane O
Baer, Benjamin B
Barr, Harriette Anna
Berger, Mitchell
Brown, Rebecca
Bond, Fannie P
Brady, Grace H
Burgraf, Frank B.
Burns, Helen R
Comton, George W
Delman, Herman B
Downing, Rose Monroe
Downing, Augustus C
Fritch, Morris
Epstein, Fred
Ellman, James F
Fox, Ann R
Frazer, Adelina B
Freedman, Lawrence I
Fricke, Martha L
Gill, Edna M
Gold, Benjamin
Goldman, James
Goldstein, Jacob
Goodstein, Philip
Grossman, Ella K
Haggenheim, Joseph
Herman, John P
Hirsch, Mary
Holland, Joseph F
Hoodwin, Emma
Hubbell, Eliza Platt
James, Grace B
Joseph, Joseph S
[illegible]
[illegible] Lucille
[illegible]
[illegible]
Kohn, Samuel
Kosina, William J
Kraeutler, John F.
Kram, William C
Krechlow, Joshua
Kuer, Frank A., Jr.
Lily, J. Joseph
Lilman, Morris
Lipman, Julian
Lomatis, Walter F.
McCain, Leila F
McMahon, Frank H.
Mahoney, James A.
Mallon, John C
Meador, James J
Nemeth, Albert
Nevils, W. Coleman
O'Connor, Katherine
O'Keffe, Thomas
Pavel, Sam
Rothon, August L.
Robinson, M. M. W.
Rugendorf, Fred
Salomon, Joseph B.
Schaub, Charles F
Schlosser, Shirley
Seder, David William
Shapiro, Libby
Shepard, Hermine D.
Solomon, Nathan
Stamm, Roger W.
Stier, Mark
Sull, Henry
Sullivan, Susan K
Taylor, James B
Van Dam, May E. L.
Vom Clara, S. E
Vorsanger, Bertha
Wilson, Laura G. F
Zelmar, Reuben
Zobman, Nathan

SHAPIRO—[illegible] Independent Funeral Home, [illegible] services at [illegible] Ave.

SHIPPARD—Hermine [illegible]

STAMM—[illegible] Funeral Home, [illegible] Ave. [illegible]

STIER—Mark, devoted husband [illegible] Funeral Home, [illegible] Ave. [illegible] Jerome Ave. [illegible]

STOLL—Henry, [illegible] with the deepest sympathy to the [illegible] Stoll. We [illegible] very good friend who will be greatly missed.

SULLIVAN—Susan K., on Oct. 12, [illegible] Edward J. [illegible] of Joseph J. [illegible] Funeral Home, [illegible] Ave. [illegible] Friday, [illegible]

TAYLOR—[illegible] Funeral Home, [illegible] Ave. [illegible]

VAN DAM—May E. L., beloved wife of [illegible] Funeral Home, [illegible] Ave. [illegible] Friday, [illegible]

MACFADDEN DEAD; HEALTH CULTIST, 8[illegible]

Magazine Publisher Known [illegible] Pioneer F[illegible] W. [illegible] Owner of Liberty

FOUNDED GRAPHIC HERE

Gift of $5,000,000 to Spread Study of Health Topics—Author of Encyclopedia

Bernarr Macfadden

MAJ. J. J. LILLY, EX-CITY OFFICIAL

Retained Aide to Corporation Counsel—Dead—Served With 69th N. Y. Infantry

Walker, Pastor

Macfadden Funeral Held

DAVID W. HENR[illegible] WAS TOLEDO U.

[illegible] Dubov, Blind Aid

MRS. C. SHILLAR[illegible]

Mrs. Henry Suydam

Nelson M[illegible] Estate [illegible]

Otto Fr[illegible]

EX-REPR[illegible]

Hotel New Yorker
New York December 20. 1931

Pirsack Esq.
West 103 Street, N.Y.

My dear Naughton Ferguson,

Thanks for your letters of the 18th and 20th inst. Later I am afraid that I will get a swelled head from your praise.

I do not know whether I have brought out clearly the most striking feature of my whole adventure, namely, that everything I saw, heard or felt appeared entirely new to me. I never realized that I had

actually lived the same life before
the final shock which shook my life like
an earthquake. What I [illegible]
not likely to be repeated for there is
[illegible] than one [illegible]
who would [illegible]

In view of your [illegible]
[illegible] that if we had a [illegible]
[illegible] with a [illegible]
by letter and [illegible], a [illegible]
could be realized [illegible]
[illegible] expressed on the [illegible]
[illegible] a [illegible] of the [illegible]
the [illegible] of the [illegible]
I am [illegible] [illegible]

conversion will come ~~[illegible]~~ as I ~~[illegible]~~ a real service to your friends by converting them to my doctrine. If it ~~[illegible]~~ not for my unbreakable resolve I would have been delighted to accept the sufficient hospitality. But you know that I have already cut down my prospective span of life by a quarter of a century in abandoning alcohol and ~~[illegible]~~ take good care to conserve the one hundred ~~[illegible]~~ for your life.

As ever Sincerely yours

N. Tesla

New York December 11, 1934

To my Friend and Incomparable Poet
George Sylvester Viereck.

Fragments of Olympian Song.

While listening to my cosmic phone
I caught words from the Olympian throne.
A messenger was alone around,
That much I could gather, either by sound.

"There's thunderbolts with the Zeus
He's busy as problem as ever

The Lord said unto Moses to do himself
Now he whom the forward of his heart
And that as Moses standing there,
The forward that had an understanding
Put him to hearing, for see,
Where God's power under right he,

"I make thereof, that truth has kept,
"To remember that, make be forgot,
From thinks of any a practice of pride,
He takes it to heart, as all but truth,

"So if thou splendor and heavenly face—
Why do so many hypocrisy place?"

"My [illegible] is written in [illegible]
[illegible] the energy [illegible] much stronger
Nothing is [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible]

Rubbers, in truth, they work as fast that
[illegible] are trying to think our [illegible],
The latest title of a [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] will be [illegible] [illegible]
Those beggars are a pest [illegible]

For fact, sir, I scan they dimmed your renown
And turned your great science upside down.
Alas, a long haired crank, Einstein is name,
Puts on your legs [illegible] all the blame

Sap: matter and force are transmutable
And wrong the laws you thought 'immutable'.

"I am much too ignorant, my son,
For grasping schemes so finely spun.
My followers are of stronger mind
And I am content to stay behind,
Perhaps I failed, but I did my best,
These masters of mine may do the rest.
Come, Kelvin, I have finished my cup. —
Now — your friend Tesla — [illegible]

"Ah, gentle Kelvin, [illegible] —
It would be [illegible]

[illegible] — [illegible] —
A knock and — the bedlam of the street —

— Nikola Tesla
[illegible]

[illegible]

[illegible]

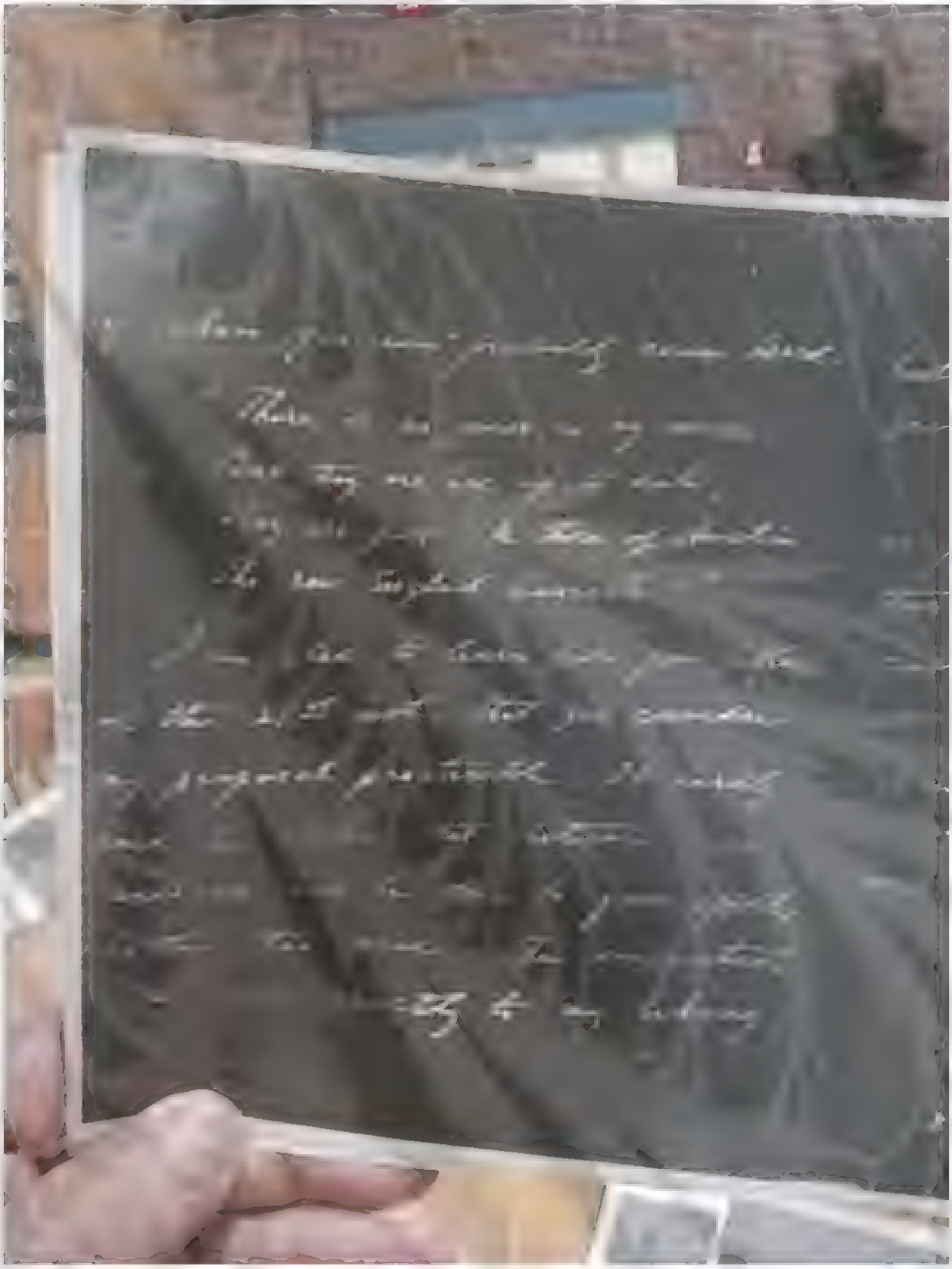
J. S. Pirnell Esq.

[illegible]

[illegible]

[illegible]

[illegible]



Hotel New Yorker
New York April 1. 1935

To Sylvester Viereck Esq
027 West 113 Street
New York.

My dear Viereck,

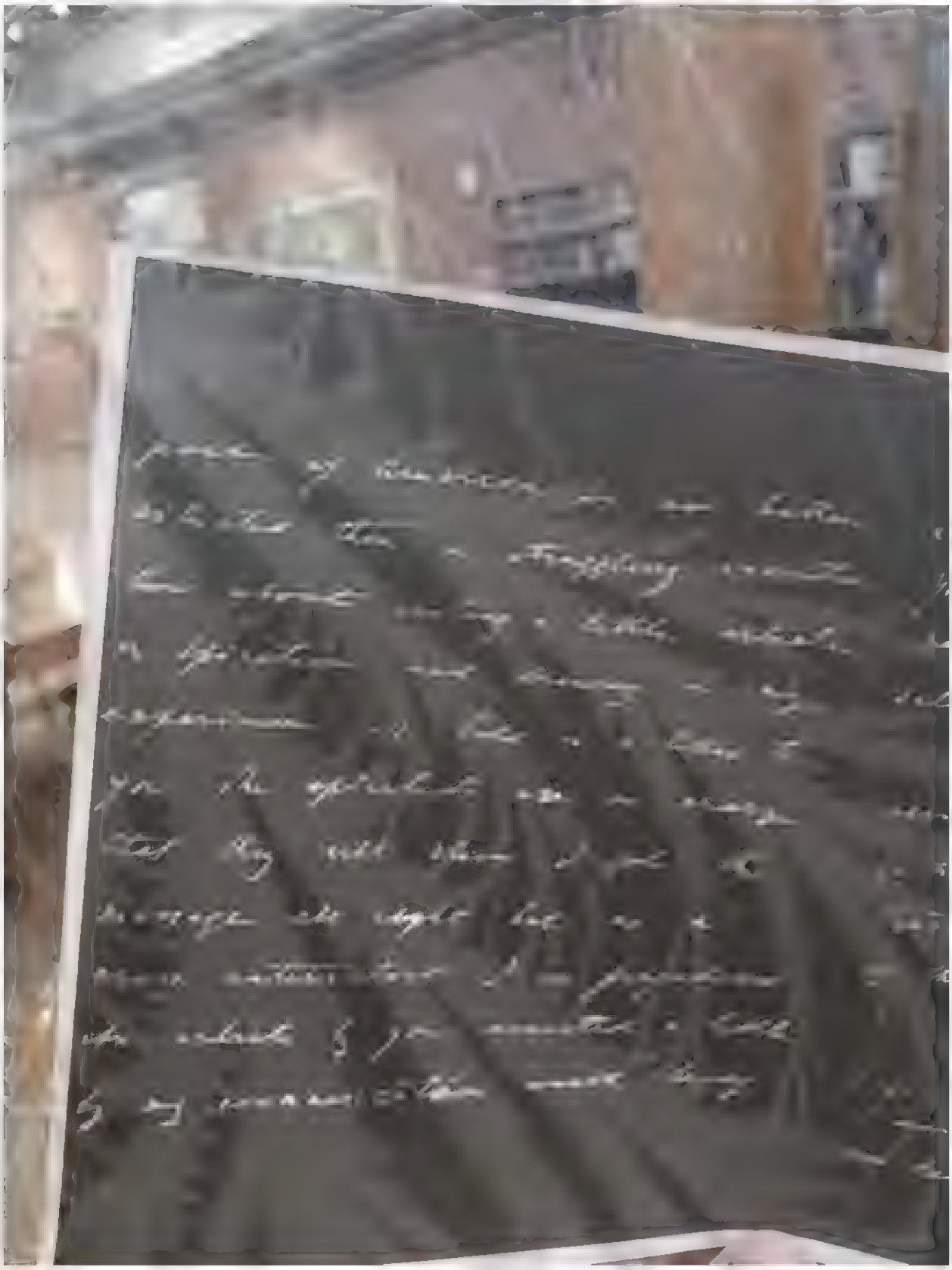
Answering at the late date your kind letter of March 25th I am surprised that I did hear from you. I know that you are trying to take advantage first of me. I am horrified to think that

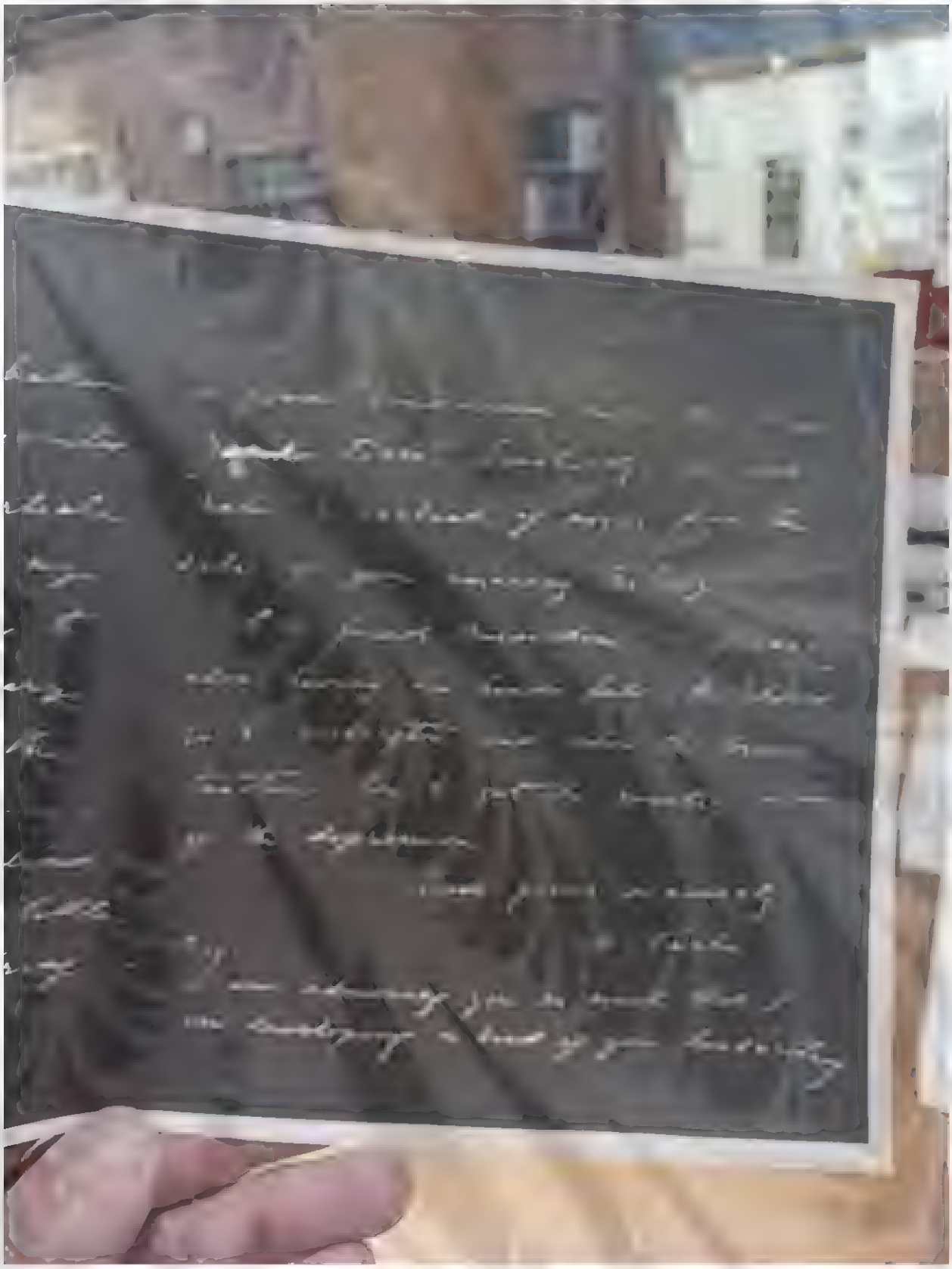
[illegible]

[illegible]

[illegible]

Hotel New Yorker
NEW YORK





[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] you [illegible] [illegible]

[illegible] diligence in acknowledging your always welcome letters. But [illegible] [illegible] [illegible] me of late were quite [illegible]

Under [illegible] [illegible] [illegible] [illegible] that you [illegible] intended to correct. You did not get [illegible] information from me in our short talk and, besides, [illegible] introduction would have placed me in a difficult position [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible]

With [illegible] [illegible] [illegible]

[illegible]

[illegible]

C
O C
P O
Y

July 6, 1936

Dr. Nikola Tesla
New York City

Dear Dr. Tesla:-

I wish to extend to you my congratulations on your 80th Birthday, also to remind you of the pleasant year that I spent with you, as your assistant during 1917, when you were at the Pyle National Company in Chicago.

Yours for many more Happy Birthdays,

Walter W. Wilhelm
3500 East Biddle Street
Baltimore, Maryland

WWW:DFB

TUBE TALK

by Ted Hannah, K3CL

The year was 1936. In Europe, Hitler occupied the Rhineland, civil war erupted in Spain, and in England, Edward VIII gave up his throne, saying that he found it impossible to discharge his duties as king "without the help and support of the woman I love," Mrs. Wallis Warfield Simpson.

In America, Frank Capra won an Academy Award for directing "Mr. Deeds Goes to Town", Margaret Mitchell published *Gone With the Wind*, and the most expensive Ford automobile, the stylish convertible sedan, could be yours for $780.

There were appoximately 40,000 amateur radio operators in the United States in 1936, many of them using homemade transmitters and receivers, although some of the more affluent hams were using the new Hammarlund Super Pro receiver, the first of a long and illustrious line of Super Pros.

Prometheus Books

[illegible] information contact:
[illegible] Pulotta
(716-837-2475)

1201 Kensington Avenue
Buffalo, N.Y. 14215
Tel 716-837-2475
If no answer
716-877-0304

BOOK NEWS

NOTED CHICAGO LAWYER PUBLISHES BOOK ON VIERECK, LITERARY GENIUS AND AMERICAN DEFENDER OF NAZI GERMANY

[illegible] BY [illegible] SMITH: [illegible]

[illegible] Elmer Gertz

[illegible] remembers George Sylvester Viereck, [illegible] Germany, [illegible] and [illegible] American [illegible] [illegible] Hohenzollern dynasty. As a [illegible] native country to come to America, where he began to write poetry. His verse came to be regarded as brilliant--exhibiting the genius [illegible] age 20, Viereck had already achieved some notoriety as a poet. Having [illegible] literary periodicals--including The International--Viereck continued to write poetry, and by [illegible] was recognized by many as a leading figure in American poetry, [illegible].

Viereck's literary fame came to a quick halt, however, when sympathy for his native country became a preoccupation in his writings. During World War I he was often accused of being treasonous. Later, as a highly paid journalist, Viereck interviewed such famous figures as Einstein, Mussolini, and Hitler. Viereck supported [illegible] and during World War II was imprisoned for issuing pro-Nazi propaganda. [illegible]

This engaging, lucid account of Viereck's life is written by Elmer Gertz, noted attorney for Nathan Leopold, Jack Ruby, and others. Viereck and Gertz were close friends for many years, despite their strong differences. They exchanged hundreds of fascinating letters, many of which are woven into this provocative study. This book takes an honest and revealing look at Viereck. As the first definitive biography of this enigmatic figure, Alchemy of a Barbarian is a much needed book. Of particular interest to poets, historians, and social scientists, it will also interest the general reader.

309 Pages
Cloth: $[illegible]

Publication Date March 27, 19[illegible]
ISBN [illegible]

EN ROUTE FOR WASHINGTON

On a trip from Atlanta to Washington, I wore both handcuffs and footirons. The footirons were not even removed in bed. It happened to be my Birthday, December 21st, 1944. Hence these lines.

When warclouds seemed to gather
I wrought a mighty spell,
Invoking Freedom's Father
And His Farewell.

And now with mock and frown
They drag me to my doom,
The city once his-town
And now his-tomb.

I am the dreg of dregs,
An Isolationist,
With iron on my legs
And on my wrist.

For those who will not kneel
Irons and handcuffs too:
This is a Savage Deal -
But is it New?

Through weary centuries
Since Cain his brother slew
These were the remedies
That tyrants knew.

I am your Lover true,
Land of the Brave, the Free.
Are handcuffs, irons too,
Your gift for me?

Handcuffs and irons too,
My Goddess, Liberty,
These shame and fetter you,
They shame not me.

While far from Washington
With soul and heart and [illegible]
At Anzio's beach, my son
Died in your name.

George Sylvester Viereck

(As revised by Tesla himself
George Sylvester Viereck.)

I EXPECT TO TALK TO MARS

by

Nikola Tesla

As Told To

George Sylvester Viereck.

Nikola Tesla is the l[illegible] of the Electric [illegible] not be what it is t[illegible] dis-covered the Rotary [illegible] vented the rot[illegible] de-scribe the veneral[illegible] inventor's inventor." Recently, on the occasion of his 80th birthday, both the Serbian and the Yugoslav Governments honored Tesla with hi[illegible]h decorations.

In 1899, while experimenting with a wireless receiver of extraordinary sensitivity, I detected faint signals from Mars, our bother planet. I could not interpret the signals, but they seemed to suggest a numerical code, one - two - three - four. The Martians, I assumed, used nu numbers in their attempts to communicate with the Earth because arithmetic constitutes a universal language.

In my attempts to elucidate the problem of these impulses from outer space, I received ridicule instead of cooperation. Other, more practical, problems monopolized my attention, buththe idea of experimenting with inter-planetary communications never ceased to intrigue me. One raason for

(Tesla never had been interviewed this - the interview was actually a direct extract direct by Dave Post after the Tesla was dead)

(Tesla never had been interviewed this - the interview was actually a direct extract direct by Dave Post after the Tesla was dead)

The first [illegible] about 1905-6. [illegible] Tesla [illegible] Sunday would [illegible] appeared in the [illegible] the [illegible] sounds [illegible] the source of which he didn't know [illegible] denied he had made any statements about the signals [illegible] or anything suggest [illegible] to the author of the article. Said the whole story was pure imagination on the part of the author of the article.

severing my very pleasant relations with George Westinghouse and Thomas Edison, notwithstanding tempting propositions from both, was my desire to follow my own speculations in the great laboratory I built in New Jersey.

Tesla had a laboratory in N.J.

Some of my discoveries and inventions have made electric history. They were practical devices, susceptible of commercial exploitation. But my chief recreqtion was to study the universe, and the place of the earth in the starry system. Until man can talk in some manner with the inhabitants of other stars, he remains an earth-bound worm. My most recent discoveries, if verified by experience, will give wings to the earth-worm. To me, I trust, they will give abiding fame. The man who evolves a method of communicating with other planets, will be remembered in human annals after all present inventions are dipped in oblivion. I would willingly sacrifice all my other achievements to realize this dream. I am certain that I have found a solution theoretically beyond dispute.

I believe that my recent inventions, bearing upon this point, are more important than any of the seven hundred patents I previously gave to the world. Man reaches his maximum power in his old age, not in middle life. Every one should have a decade or so to sum up his life work after seventy-five. Every onw would, if we lived sensibly. After man is seventy-five, he has gained so much experience that he can solve many problems that hitherto seemed insoluble. I hope, by systematizing my work and organizing the income and expenditure of my body with

Tesla expected to live 140.

$\frac{140}{15} = \frac{87}{x}$

scientific precision, to reach the ripe age of 140. Long before that, communication with Mars and other stars will have become practicable.

I do not envisage an Inter-planetary Post Office or an Inter-planetary Telephone Central. An imaginative friend of mine suggests that it will be possible to pick up a Tesla phone, dial Mars 2211, and speak to a friend on a distant planet. That, for reasons that will presently appear, is beyond the range of possibility. But it will be possible to flash a message to Mars and to receive some response from intelligent entities there.

H. G. Wells, in an audacious short story, "Star-Begotten", advances the theory that the Martians, recognizing that they are living on a dying planet, are attempting to influence life on earth, with the object of reproducing themselves, so to speak metaphysically, in us. He insinuates that cosmic rays, directed from Mars, affect our genes, those carriers of human characteristics, and produce deviations in the human species important enough to create in time a new, more civilized human race.

I doubt, very much, that Wells kind, made this mistake. In his studies of cosmic rays he accepted the attributed distance, estimated the sun

Mr. Wells forgets to tell that Mars is 10,000 light years away from the earth. If rays from Mars are to affect the present generation of men, they must have been dispatched 10,000 years ago, when most of us were howling savages. Rays transmitted today (unless the Martians have anticipated my discovery) would affect men 10,000 years hence.

the Gnomes. This was in his early middle age. The poem, for which you

Quote a strange wireless Tesla was a firm believer in Newton's celestial mechanics, which includes Kepler's laws on planetary distances and periods. It would be impossible to fit a [illegible] 10,000 l.y. orbit for Mars into Newtonian mechanics

If a man wanted to ring up Mars, he would have to wait 10,000 years or more, because sound travels more slowly than light, before his voice could reach a listening ear. Even if his voice traveled with the speed of light, it would not reach the party at the other end [illegible] until the party making the call had been buried 10,000 years. Message and answer would fall on dead ears. That is one of the chief difficulties involved in inter-planetary communication. The movement of the stars, which makes it difficult for any impulse to reach a pre-defined spot, constitutes another difficulty.

Yet, I believe, that intelligent, sentient life exists on many planets, including Mars, and in universes revolving about suns more gigantic than ours. Mars in many respects resembles the earth, an earth grown old. It is logical to assume that the biological evolution of the Martians more or less parallels that of the human species, although they may have reached a stage far in advance of ours. Their perception of the external world must correspond more or less to ours. They see, smell, feel, hear, life through the same senses as we.

It is no strain on the imagination to assume some super-Tesla on Mars, perfecting at this very moment some new system of communication with us, since we have been deaf to all previous signals. But unless a revolutionary discovery enables the Martians and us to overcome the gap in time, both their and [illegible]

our present civilization will have perished before a message from one star to another can reach it's destination.

Theoretically it might be possible to create some self-perpetuating body of scientists that would keep its ear glued to an inter-stellar telephone for ten times ten centuries; practically I fear it is out of the question. New nations, new mountain-ranges, new oceans, may be born before the cloak of the universe registers another ten thousand years.

Communication between two planets involves two essential conditions:

1) Coincidence in Time
2) Similarity of Evolution.

To meet the first condition, we must flash our messages, not with the speed of light, the fastest at present known to science but, to all intents and purposes, instantaneously. To meet the second condition, it is essential that the inhabitants of the planets, with which we desire to establish some contact, have reached a phase of evolution similar, or superior to ours. There can be no intelligible or intelligent intercourse between an Amoeba and a Goethe or a Shakespeare.

It is safe to assume that somewhere in the universe, probably on Mars, the prerequisites for an interchange of ideas exists. But how can we meet the first condition ? -- to overcome the handicap of distance and time? We need a force that transmits our message with infinite velocity. Unfortunately, the velocity of every known ray, however fast, is finite.

Dr Tesla's discussion of the transmission of wireless waves you will find a gross error.

He describes a component of heat waves which moved around the surface of the earth and attained infinite velocity in traversing the first quadrant, which the same wave was moving in a straight line at the velocity of light.

I believe that I have circumvented the difficulty. My invention makes it possible to transmit enormous amounts of energy through inter-planetary space and thousands of light years with practical instantaneity. With such a force it is possible to dispatch signals that can be detected by intelligent entities on other planets.

We need not flash the message directly to the other planet; we might use the moon as our writing pad, and inscribe our message on its pallid surface. The planetarians can reply flash by flash to our communication, if they too have solved -- as I think they must have -- the problem of instantaneous transmission.

This was not discussed on the moon is less than a light second distant.

How?

The mathematics and physics are so intricate that it is impossible to explain my plan in languages intelligible to the layman. For the present it must suffice to state that I use a new kind of energy and the combined resources of thirty-six highly technical inventions to beat the obstacle of time and space. The description of these inventions, even in technical symbols, would take a great deal of space. Fortunately the apparatus I have devised is small and compact. In spite of its modest size, it can flash energy in considerable amount through interstellar space without loss or dispersion.

2.

Other men will have to collaborate with me to work out the details of the plan for interplanetary communication. I expect to confer with my friend George E. Hale, the most distinguished astronomer of our day, who has made the discovery of the spectroheliograph, a device to supply a target to the world of the planetarians.

at any distance from 1 mile to 1000 miles it would be worth while to demonstrate

[illegible]

[illegible] putting a bright spot on the dark [illegible] of the moon is much different than putting one on the bright areas, or "pallid moon" as stated herein. Leaving the [illegible] to another misconception of the situation.

Tesla made such a statement in his last "birthday" mass interview arranged by the press agent of the hotel at which he was staying [illegible] to get the [illegible] in newspapers. Also, I believe in a statement, [illegible] which he should not have made in [illegible]

astronomist of the Mount Wilson Observatory in Pasadena, California, who knows more about solar energy than any other human being, concerning the practical use of my apparatus in conjunction with his researches. In the meantime I shall submit to the Institute de France an accurate description of my devices, data and calculations, together with my claim for the prize of Fcs.100,000, offered by Pierre Guzman for the first communication with other worlds.

I am convinced that the prize will be awarded to me because, I repeat, the problem is solved. The money is a trifling consideration, but for the great historical honor of being the first mortal to achieve the miracle of a planetary communication I would be almost willing to give my life.

Tesla was opposed to Einstein's relativity and other theories as were all the "die hard" victims of physics. [illegible]

Relativists may object that my efforts will be thwarted by what Einstein calls "the curvature of space". My own investigations based on a new dynamic theory of gravity demonstrate conclusively that space is not curved. According to the Relativists, space is distorted into curves by the influence upon it of celestial bodies. But the law of cause and effect is immutable. Every action induces a reaction. If the planets act upon space, space in turn reacts upon the planets. If the planets pull space out into curves, the counter-pull of space upon the planets neutralizes the effect, and straightens out the curves. Inasmuch as action and reaction are coexistent, the supposed curvature of space is a figment of the mathematical imagination.

Tesla failed to grasp the fundamental [illegible] of Einstein's field theory.

Simple relativity is as old as our earliest philosophic records

The relativity theory, by the way, is much older than its present proponents. It was advanced over two hundred years ago by my illustrious countryman Boscovich, the great philosopher who, not withstanding other and multifold obligations, wrote one thousand volumes of excellent literature on a vast variety of subjects. Boscovich dealt with relativity, including the so-called time-space-continuum, which enters into my calculations for inter-planetary calculations, masterfully and faultlessly. What he wrote was gold, compared with which the modern additions are dross.

My invention will carry my signals through space, curved or uncurved, with instantaneous precision. My statement will be attacked as fantastic. I am accustomed to that. It has happened to many of my ideas. But in most cases those who scoffed at first, eventually agreed with me -- if they lived long enough. I disagreed with Thomas Edison on the most effective electrical current. Edison championed the direct, I the alternating current. Events have justified my preference. Alternating currents are the life blood of industry today. Events will verify many of my predictions.

Even with our present limited knowledge, it is safe to venture certain prophesies. I visualize the whole earth as a huge brain in which before long all people will be able to communicate with each other through vest pocket radio equipments, sufficiently delicate to catch thought waves. Planes will be operated, newspapers printed, by wireless. Man will

tap the eternal heat reserves of Mother Earth to run his machines; he will tame Vesuvius as he has (with the aid of one of my inventions) Niagara.

Most of the changes enlisted will come, because man will be able to transmit power, power gained not only from the earth but from the motion of the stars, across vast distances; land, air and sea will be his carriers. All this is within sight of the present generation, the product of the imperfect human brain, but the imagination balks at the immense possibilities that will be open to man when, after perfecting my system of inter-planetary communications, he will be able to gather knowledge accumulated by intelligent beings on other stars.

I doubt that Tesla ever had the thought that the incandescent stars are unhearted.

As Related by Tesla to George Sylvester Viereck

I EXPECT TO TALK TO MARS

by

Nikola Tesla

As Told To

George Sylvester Viereck.

Nikola Tesla is the last of the giants of the Electric Age. Civilization would not be what it is today if he had not discovered the Rotary Magnetic Field and invented the rotary motor. We follow Edison in describing the venerable scientist as the inventor's inventor. Recently, on the occasion of his 80th birthday, both the Serbian and the Yugoslav governments honored Tesla with high decorations.

In 1899, while experimenting with a wireless receiver of extraordinary sensitivity, I detected faint signals from Mars, our brother planet. I could not interpret the signals, but they seemed to ~~spell~~ suggest a numerical code, one- two- three - four. The Martians, I assumed, used numbers in their attempts to communicate with the Earth because arithmetic constitutes a universal language.

In my attempts to elucidate the problem of these impulses from outer space, I received ridicule instead of cooperation. Other, more practical, problems monopolized my attention, but the idea of experimenting with inter-planetary communications never ceased to intrigue me. One reason for

severing my very pleasant relations with George Westinghouse [illegible] Thomas Edison, [illegible] [illegible] from both, was my desire to follow my own speculations in the great laboratory I built [illegible] in New Jersey.

Some of my discoveries and inventions have made electric history. They were practical devices, susceptible of commercial exploitation. But my chief recreation was to study the universe, and the place of the earth in the starry system. Until man can talk in some manner with the inhabitants of other stars, he remains an earth-bound worm. My most recent discoveries, if verified by experience, will give wings to the earthworm. To me, I trust, they will give abiding fame. The man who evolves a method of communicating with other planets, will be remembered in human annals after all present inventions are dipped in oblivion. I would willingly sacrifice all my other achievements to realize this dream. I am certain that I have found a solution theoretically beyond dispute.

I believe that my recent inventions, bearing upon this point, are more important than any of the seven hundred patents I previously gave to the world. Man reaches his maximum power in his old age, not in middle life. Every one should have a decade or so to sum up his life work after seventy-five. Every one would, if we lived sensibly. After man is seventy-five, he has gained so much experience that he can solve many problems that hitherto seemed insoluble. I hope, by systematizing my work and organizing the income and expenditure of my body with

scientific precision, to reach the ripe age of 140. Long before that, communication with Mars and other stars will have become practicable.

I do not envisage an Inter-planetary Post Office or an Inter-planetary Telephone Central. An imaginative friend of mine suggests that it will be possible to pick up a Twin phone, dial Mars 2211, and speak to a friend on a distant planet. That, for reasons that will presently appear, is beyond the range of possibility. But it will be possible to flash a message to Mars and to receive some response from intelligent entities there. H. G. Wells, in an audacious short story, "Star-Begotten", advances the theory that the Martians, recognizing that they are living on a dying planet, are attempting to influence life on earth, with the object of reproducing themselves, as to speak, metaphysically, in us. He insinuates that cosmic rays, directed from Mars, affect our genes, these carriers of human characteristics, and produce deviations in the human species important enough to create in time a new, more civilized human race. Mr. Wells forgets to tell that Mars is 10,000 light years away from the earth. If their rayfirs from Mars to affect the present generation of man, they must have been dispatched 10,000 years ago, when most of us were howling savages. Rays transmitted later (unless the Martians have anticipated my discovery) would affect man 10,000 years hence.

If a man wanted to ring up Mars, he would have to wait [illegible] years or more, because sound travels more slowly than light, before his voice could reach a listening ear. Even if his voice travelled with the speed of light, it would not reach the party at the other end of the line until the party making the call had been buried 10,000 years. Message and answer would fall on dead ears. That is one of the chief difficulties involved in inter-planetary communication. The movement of the stars, which makes it difficult for any impulse to reach a pre-defined spot, constitutes another difficulty.

Yet, I believe, that intelligent, sentient life exists on many planets, including Mars, and in universes revolving around suns more gigantic than ours. Mars, it is generally believed, in many respects resembles the earth, its earth grown old. It is logical to assume that the biological evolution of the Martians more or less parallels that of the human species, although they may have reached a stage far in advance of ours. Their perception of the external world must correspond more or less to ours. They see, smell, feel, hear, life through the same senses as we. It is no strain on the imagination to assume some super-Tesla on Mars, perfecting at this very moment some new system of communication with us, since we have been deaf to all previous signals. But unless a revolutionary discovery enables the Martians and us to overcome the gap in time, both their and our present civilization will

have perished before a message from one star to another can reach its destination.

Theoretically it might be possible to create some self-[illegible] body or [illegible] that would keep its war-[illegible] to an inter-stellar telephone for ten times ten centuries; practically I fear it is out of the question. New nations, new mountain-ranges, new oceans, may be born before the clock of the universe registers another ten thousand years.

Communication between two planets involves two essential conditions:

1) Coincidence in Time
2) Similarity of Evolution.

To meet the first condition, we must flash our message, not with the speed of light, the fastest at present known to science but, to all intents and purposes, instantaneously. To meet the second condition, it is essential that the inhabitants of the planets, with which we desire to establish some contact, have reached a phase of evolution similar, or superior to ours. There can be no intelligible or intelligent intercourse between an Amoeba and a Goethe or a Shakespeare.

It is safe to assume that somewhere in the universe, probably on Mars, the prerequisites for an interchange of ideas exists. But how can we meet the first condition ? -- to overcome the barriers of distance and time? We need a force that transmits our message with infinite velocity. Unfortunately, the velocity of every known ray, however fast,

is finite. I believe that I have circumvented the difficulty. My invention makes it possible to transmit enormous amounts of energy through inter-planetary space and thousands of light years with practical instantaneity. With such a force it is possible to dispatch signals that can be detected by intelligent entities on other planets - now.

We need not flash the message directly to the other planet; we might use the moon as our writing pad, and inscribe our message on its pallid surface. The planetarians could reply flash by flash to our communication, if they too have solved -- as I think they must have -- the problem of instantaneous [illegible]

How?

The mathematics and physics are so intricate that it is impossible to explain my plan in language intelligible to the layman. For the present it must suffice to state that I use a new kind of energy and the combined resources of thirty-six highly technical inventions to beat the obstacle of time and space. The description of these inventions, even in technical symbols, would take a great deal of space. Fortunately the apparatus I have devised is small and compact. In spite of its modest size, it flashes energy in considerable amount through interstellar space without loss or dispersion.

Other men will have to collaborate with me to work out in the details of the plan for interplanetary communication. I expect to confer with my friend George E. Hale, the great astronomist

of the Mount Wilson Observatory in Pasadena, California, who knows more about ether energy than any other human being, preferring the practical use of my apparatus in conjunction with his researches. In the meantime I shall submit to the Institute de France an accurate description of my devices, data and calculations, together with my claim for the prize of Fcs.100,000, offered by Pierre Guzman for the first communication with other worlds. I am convinced that the prize will be awarded to me because, I repeat, the problem is solved. The money if a trifling consideration, but for the great historical honor of being the first mortal to achieve the miracle of a planetary communication I would be almost willing to give my life.

Relativists may object that my efforts will be thwarted by what Einstein calls "the curvature of space". My own investigations based on a new dynamic theory of gravity demonstrate conclusively that space is not curved. According to the Relativists, space is distorted into curves by the influence upon it of celestial bodies. But the law of cause and effect is inviolable. Every action induces a reaction. If the planets act upon space, space in turn reacts upon the planets. If the planets pull space out into curves the counter-pull of space upon the planets neutralizes the effect, and straightens out the curves. Inasmuch as action and reaction are coexistent, the supposed curverture of space is a figment of the mathematical imagination.

The relativity theory, by the way, is much older than

his present achievement. It was dreamed over two hundred years ago by my illustrious countryman Boscovich, the great philosopher who, notwithstanding other and multifold obligations, wrote one thousand volumes of excellent literature on a vast variety of subjects. Boscovich deals with relativity, including the so-called time-space continuum, which [illegible] for inter-planetary calculations, [illegible] and faultlessly. What he wrote was gold, compared with which the modern additions are dross.

My invention will carry my signals through space, curved or [illegible], with [illegible] precision. My statement will be attacked as fantastic. I am accustomed to that. It has happened to many of my ideas. But in most cases those who scoffed at first, eventually agreed with me — if they lived long enough. I disagreed with Thomas Edison on the most effective electrical current. Edison championed the direct; I the alternating current. Events have justified my preference. Alternating currents are the life blood of industry today. Events will verify many of my predictions.

Even with our present limited knowledge, it is safe to venture certain prophesies. I visualize the whole earth as a huge brain in which before long all people will be able to communicate with each other through vest pocket radio equipments, sufficiently delicate to catch thought waves. Planes will be operated, newspapers printed, by wireless. Man will tap the eternal heat reserves of Mother Earth to run his machines; he will tame Vesuvius as he has (with the aid of one

of my inventions) Niagara.

Most of the changes enlisted will come, because man will be able to transmit power, power gained not only from the earth but from the motion of the stars, and across vast distances; land, air and sea will be his carriers. All this is within sight of the present generation, the product of the imperfect human brain, but the imagination balks at the immense possibilities that will be open to man when, after perfecting my system of inter-planetary communications, he will be able to gather tremendous energies [illegible] by intelligent beings on other planes.

WESTINGHOUSE
ELECTRIC & MANUFACTURING COMPANY

FROM New York

DATE January 3, 1939

SUBJECT Nicoli Tesla

Pittsburgh,
Mr. E. B. Roberts,
Assistant to Vice President
Industrial Relations

I called upon Mr. Tesla last evening at the Hotel New Yorker, where he occupies room 3327. I got him on the telephone from the Hotel office. He said he was not seeing anyone at present but he was profuse in his thanks for my calling and we chatted for ten minutes. He said he had been badly injured by an automobile nine months ago and was slowly recovering from his injuries. He is 83 years old.

He appeared to be thoroughly clear-headed, in fact said that since his accident his mind seemed to be clearer than ever. He said he was about ready to write to our Chairman Mr. Robertson about our Company taking up with an invention or conception which he pronounced the most valuable work he had ever done; that other people wanted to go into it, but he retained his loyalty for Westinghouse and thought we should have the first chance. So our Chairman may hear from him.

I have no doubt your tentatively commitment has been reaching him. Of course I had no way of ascertaining his financial condition. He said that he was walking around his room. Certainly his voice sounded as buoyant and enthusiastic as it was 35 years ago. The Hotel Assistant Manager told me that he was occasionally seen about the Hotel, but remained most of the time in his room and apparently saw no one. He said that Mr. Tesla might not answer my telephone call, but he did, with the above result.

Mr. Tesla promised to let me know when he was able to see me. This, of course, was after my saying that I called in behalf of his many Westinghouse friends who wanted to know how he was and also to renew my own pleasant acquaintance with him. So I cannot tell whether his desire ~~to~~ not to have me come up was due to his not wishing to be disturbed or whether one of pride in not being sufficiently presentable. I will take a chance of calling him up again a little later.

I rather imagine his financial resources are rather meagre, for he probably never knew how to use money. I remember walking down the street with him one day when he stopped at a newsstand, picked up half a dozen magazines and newspapers, pulled a big roll of bills out of his outside overcoat pocket, handed the top bill to the newsman and walked along with me. At that time he was living at the old Waldorf. This was during the period when he was building the Radio station at Wardenclyffe, L.I. for which I sold him some $75,000 worth of apparatus. He was then being financially backed by John Jacob Astor and some other wealthy people. That would have been about 1902. I have not seen him since. My impression in those days was that his ideas were extremely chimerical, for he

talked so far over my head that he was not convincing. However, I kept some reservation, as I remembered what he once did for us.

He said last evening that in the last six months he had received honorary degrees from 22 different Universities in different parts of the world.

I return herewith the correspondence accompanying your letter of December 29th.

EHSniffin:FM

E H Sniffin
Assistant to Vice President.

WHO'S WHO IN AMERICA (Vol. 21) 1940-1941

NOTE:

Home Address

Business Address

Printed in U.S.A.

STATE STATE INDICATED
RECEIVED AT

TELEPHONE YOUR REPLY TO POSTAL TELEGRAPH

Form 1.

Postal Telegraph

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CB8 DC=NO NEWYORK NY 615P NOV 21 1940

M M DUCICH=

PRESIDENCE GARY 81540 GARY IND:

=OPROSTITE NIJE MI BILO MOGUCE ODMAH PRIZNATI VASU PLEMENITU POMOC. SVETI NIKOLA I VI NAJBOLJI SU MOJI PRIJAATELJI. ZELIM VA I OBITELJI NAJVECE ZADOVOLJSTYO PRILIKOM DANASJEG PRAZNIKA.

VAS ZAHVALNI DUZNIK=

NIKOLA TESLA.

POSTAL TELEGRAPH

10th & 5th Ave.
Gary, Ind.
Tel. 2-2153

CB8 DC-NO New York, N.Y. 615P Nov 21 1940

M M Duchich 1100 Mass. Cloverleaf Dairy
Residence Gary 81540 Gary, Ind.

FORGIVE ME, IT WASN'T POSSIBLE FOR ME TO RECOGNIZE YOUR GENEROUS HELP IMMEDIATELY. ST. NICHOLAS AND YOU ARE MY BEST FRIENDS. TO YOU AND TO YOUR FAMILY I WISH THE BEST SATISFACTION ON THE OCCASION OF TODAY'S HOLIDAY.

YOUR GRATEFUL DEBTOR,

NIKOLA TESLA.

STANDARD TELEGRAPH CABLE
RECEIVED AT

Postal Telegraph

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CSB 30=NO NEWYORK NY 615P NOV 21 1940

M N DUCICH=

RESIDENCE GARY 81540 GARY IND=

=OPROSTITE NIJE MI BILO MOGUCE ODMAH PRIZNATI VASU PLEMENITU POMOC. SVETI NIKOLA I VI NAJBOLJI SU VOJI PRIJAATELJI. ZELIM VAM I OBITELJI NAJVECE ZADOVOLJSTVO PRILIKOM DANASJEG PRAZNIKA. VAS ZAHVALNI DUZNIK=

NIKOLA TESLA.

POSTAL TELEGRAPH

10[illegible] 5th Ave.
[illegible]
Tel. [illegible]-2153

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YOUR GRATEFUL DEBTOR,

NIKOLA TESLA.

WESTERN UNION (50)

1941 JAN 15 PM 3 55

0131 47=NH NEWYORK NY 15 412P

MIHAILO M DUCICH=

CLOVERLEAF DAIRY CO

DOBIO SAM SINOC STO DVADESET PET I JUTROS CETIRI STOTINE PETDESET ZAHVALJUJEM VAM OD SVEG SRCA NA VASOJ PLEMENITOJ POMOCI CEKOVE CU SLATE CIM DOBIJEM MOZEBITE BEZE NEGO SAM CEK... PER CU PRIMITI NOVACA SA DRUGE STRANE SELECI VAM ZDRAVGE I SRETAN PUT OSTAJEM VAS VECITI DUZNIK=

NIKOLA TESLA.

THE COMPANY WILL ALWAYS GIVE SUGGESTIONS FROM ITS ATTORNEYS CONCERNING

WESTERN UNION (50)

0131 47 NH New York N.Y. 15 412P

1941 JAN 5 PM 3 55

MIHAILO M DUCICH

CLOVERLEAF DAIRY CO

DEAR SIR:

WE RECEIVED TWENTY FIVE HUNDRED TODAY MORNING FOUR HUNDRED TWENTY FIVE HUNDRED, FOR YOUR CONVENIENCE

WISHING MAY BE PAID TOO.

WILL MAKE FOR THEM IN YOUR ST LOUIS DIVISION.

NIKOLA TESLA.

10-11-40

10-17-40

HOTEL NEW YORKER

THIRTY FOURTH STREET AT EIGHTH AVENUE NEW YORK

3-6-41

HOTEL NEW YORKER

THIRTY-FOURTH STREET AT EIGHTH AVENUE, NEW YORK

12 31 40

HOTEL NEW YORKER

413

HORTICUL NEW YORKER

March 2 19

Dear

I have thought that the quantity of vegetables may be increased to 1½ oz. Furthermore, I have [illegible] a sweet pea item.

On this supposition I give the relative weights of the [illegible] and their prices [illegible] the [illegible]

[illegible]	2 ounces	[illegible]
[illegible]	24 "	2.40
Pa[illegible]	8 "	0.60
Cauliflower, edible [illegible]	12 "	1.[illegible]
[illegible] beans	[illegible]	0.65
[illegible] potato	[illegible]	1.00
Sweet potato	12 "	1.50
Spinach	12 "	1.73
Fresh tomato	8 "	0.60
White turnip	10 "	0.82
Lettuce heart	4 "	0.30
Tapioca	4 "	0.52

Total weight of vegetables 112 " Protein total 13.12

equal to about 13 eggs

HOTEL NEW YORKER

THIRTY FOURTH STREET & EIGHTH AVENUE NEW YORK

Oktober 31st 1942

From Dr. Nikola Tesla Rooms 3327-28

Telephone Medaillon 3-1000

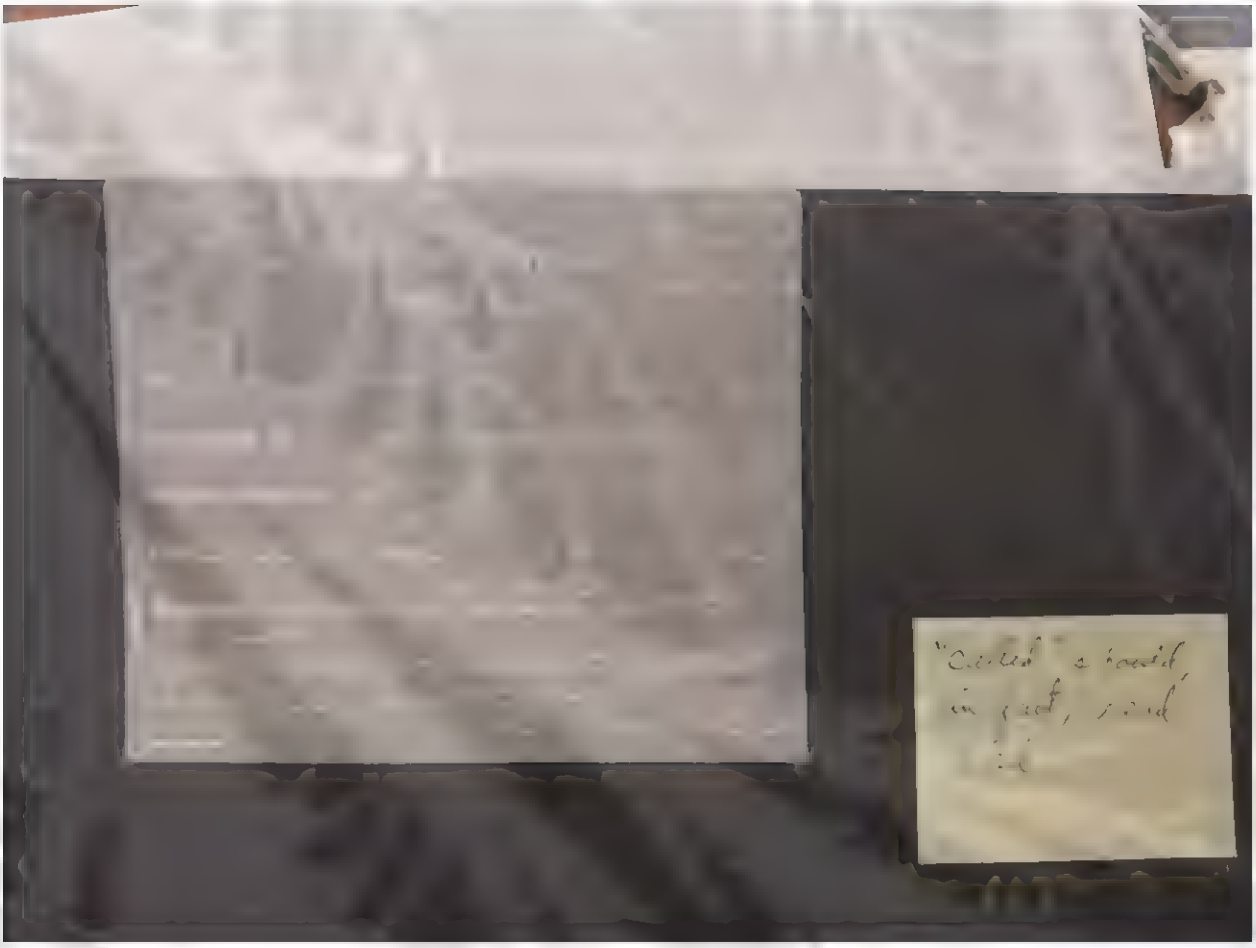
Delivery to

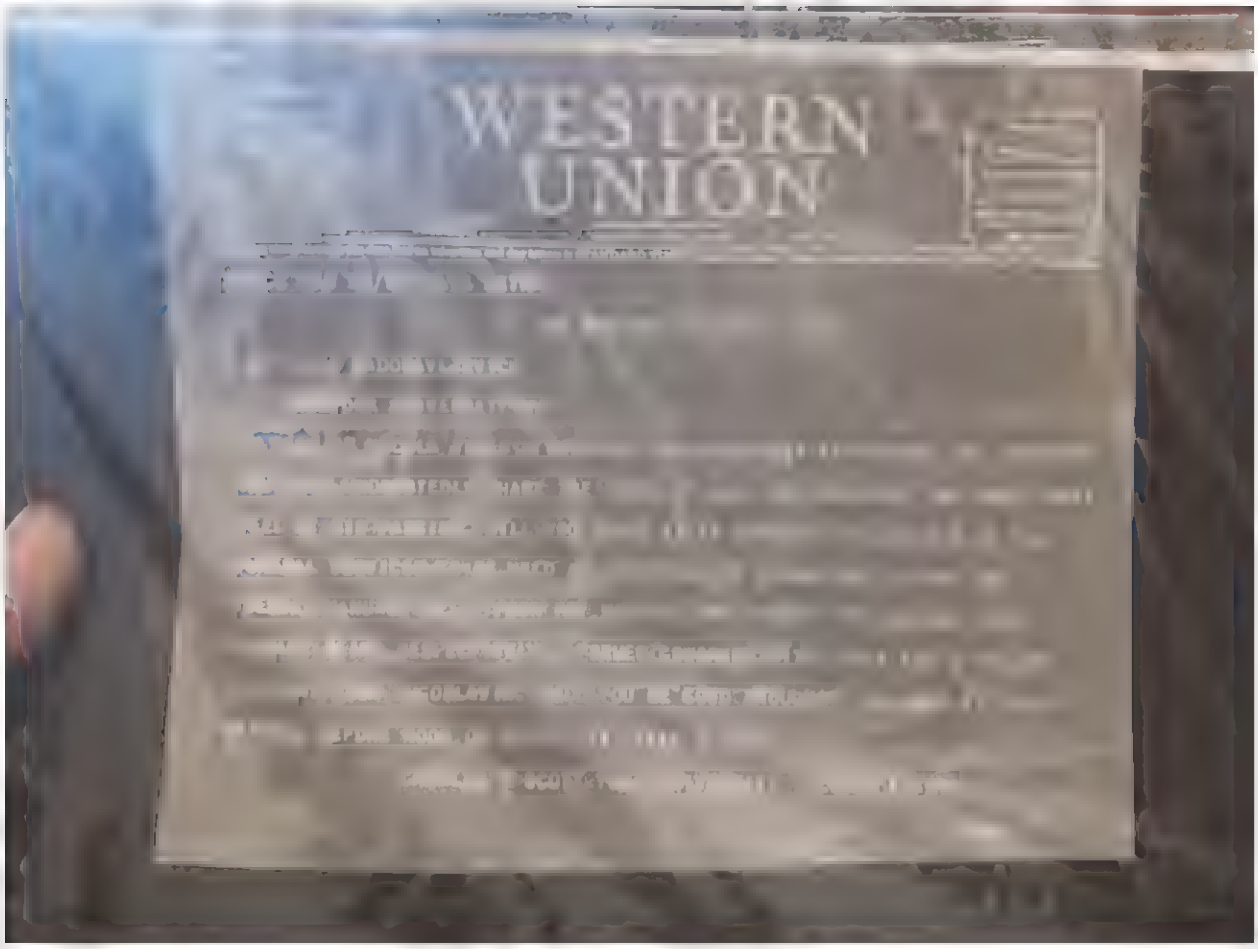
Chef Enclosing $5.00

Sous-Chef for all service

to-night

Main Kitchen Hotel New Yorker


"Called" a bowl,
in fact, it is
a


WESTERN
UNION

WESTERN
UNION

PROF VAUN RADOSAVLJEVICH

0599

WESTERN UNION

NEWCOMB CARLTON
CHAIRMAN OF THE BOARD

STANDARD TIME IN USE

[illegible] NL 2 EXTRA

2G NEWYORK NY JAN 9 1943

PAUL RADOSAVLJEVIC

NEWYORK UNIVERSITY [illegible]

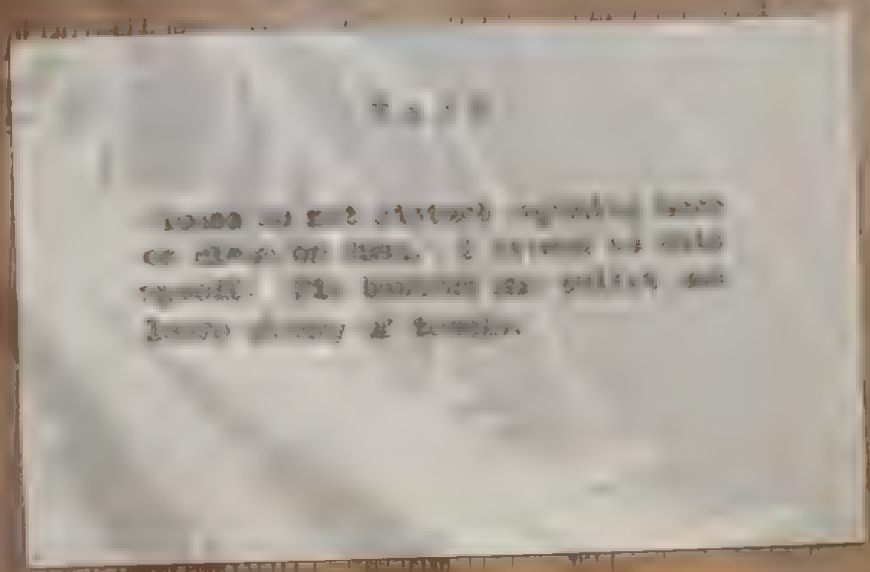
IN VIEW OF NICOLA TESLA'S ENORMOUS CONTRIBUTIONS TO SCIENCE AND INDUSTRY YOU WILL UNDOUBTEDLY SHARE THE SENSE OF LOSS AND SYMPATHY THE WORLD MUST FEEL AT HIS PASSING. WILL YOU SERVE AS AN HONORARY PALLBEARER AT THE FUNERAL SERVICES TO BE HELD AT CATHEDRAL OF ST JOHN THE DIVINE ON TUESDAY JANUARY 12 AT FOUR PM. WE TAKE THE LIBERTY OF SENDING THIS MESSAGE BEFORE NOON ON SUNDAY AT LAZA 6-0250

[illegible] 0599P

One of the many slips that Tesla continually placed around his hotel rooms.

Picked up by Kenneth Swezey upon entering Tesla's rooms at the Hotel New Yorker following his death.

Received from Swezey January 13, 1955.



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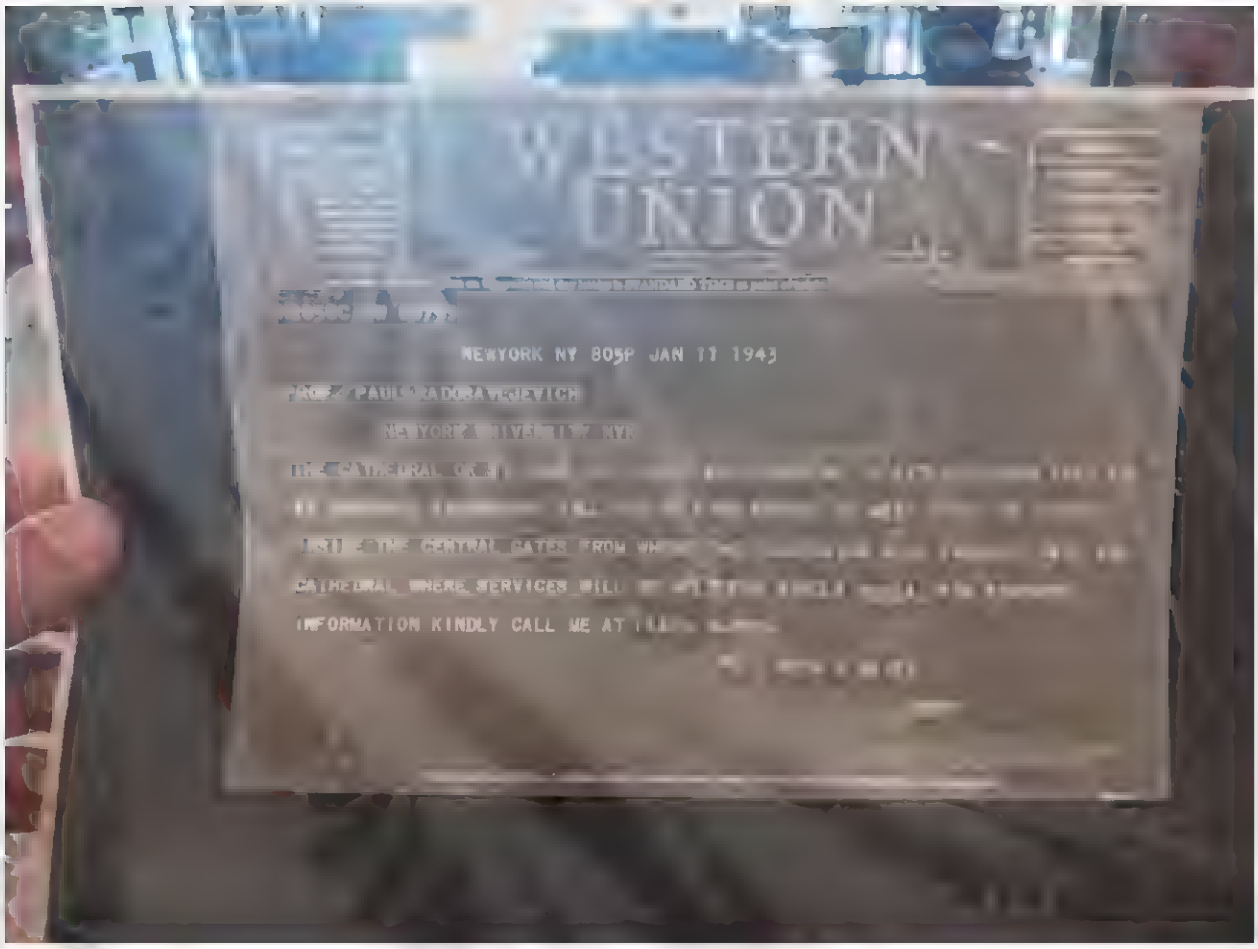

WESTERN UNION

NEWYORK NY 805P JAN 11 1943

PROF PAUL RADOSAVLJEVICH

NEW YORK UNIVERSITY NYC

IN CATHEDRAL [illegible]

[illegible] ENTRANCE THE CENTRAL GATES FROM WHICH [illegible]

CATHEDRAL WHERE SERVICES WILL BE [illegible]

INFORMATION KINDLY CALL ME AT [illegible]

the theorem

(Composition of Telegram)
(Nilbt, Jan. 12, 1943)

Yugoslav Govern. in Exile
% Dr. M. Stanoyevich
74 - 5th Ave. N. Y. City

Being ill in bed I cannot have the honor to see once again the holy face of our Dr. Nikola Tesla. His death is a great loss not only to Serbs, Jugoslavs and Slavic people, but also to the whole world especially our U. U. which he loved so dearly. He used to say, "We Serbs are proud to be citizens of the greatest & noblest country on earth, a country which realizes unity amidst diversity," to use his own expression. He loved the heroic Karageorgevich's Serbia & brave Montenegro which gave their last blood to free & unite the Serbs, Croates & Slovanes from the yoke of Austro-Hungary. He ~~considered~~ admired Karageorgevich's Jugoslavia as is testified by his recent meeting with the young King Peter II. He admired Draza Mihajlovich as a symbol of the old Serbian struggle for the Holy X (cross) & Golden Liberty. He loved heroic Russia as the mother of all Slavdom, Poland & Czechoslovakia and had nothing but pity for the fate of so called independent, Hitler's Croatia ~~&~~ Slovakia & Bulgaria. He is a symbol of our modern culture & civilization.

Dr. Paul R. Radosavljevich
Prof. at New York University

National Home Offices
CROATIAN FRATERNAL UNION
Pittsburgh, Pennsylvania

ZAJEDNICAR

— ENGLISH SECTION —

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WEDNESDAY, OCTOBER 26, 1960

Adam Sudetic

THE PASSING Oct. 10, 1960, in Detroit of Adam Sudetic marked the end of an era in the annals of the English Section of the Society's Offical Organ.

Gone is the man who was to enrich these pages the past five years by contributing a historic series of articles dealing with the lives and works of Nikola Tesla, he of immortal fame in the scientific world, and Vlaho Bukovac, the greatest Croatian artist of all time.

In submitting his articles for publication in the English Section, bro. Sudetic was always wont to "apologize" for his loose usage of the English language, a habit he attributed to the fact that he was a "self-educated American."

But his vast knowledge of such men as Tesla and Bukovac — he was an authority on both of them — far overshadowed his constant battle with the English language.

As it was, bro. Sudetic had nothing to apologize for in the end.

★ ★ ★

To Richard P. Anderson
from Dusko Rosić
[illegible]


WEBWAY

One of Nikola Tesla's gummed seals illustrating an oscillator of his invention designed for the production of ozone.

AUTOGRAPH MANUSCRIPTS
of
Nikola Tesla

Vol. I

NEGATIVE PHOTOSTAT ITEMS IN THESE VOLUMES ARE FROM THE COLLECTION OF LILLIAN McCHESNEY, BALDWIN, L.I.

One of Nikola Tesla's gummed seals illustrating an oscillator of his invention designed for the production of ozone.

CAPITAL $300,000.

3,000 SHARES

SHARES $100. EACH

The Testa Electric Light and Manufacturing Co.

OF RAHWAY, NEW JERSEY

SERIES 64

SHARES 10

INCORPORATED UNDER THE LAWS OF THE STATE OF NEW JERSEY

This is to Certify that Theodore F. Cleman

is entitled to Ten Shares of the Capital Stock

of The Testa Electric Light and Manufacturing Company, transferable only on the books of the Company, in person or by Attorney, on surrender of this Certificate. Rahway, N.J. January 2nd 1886

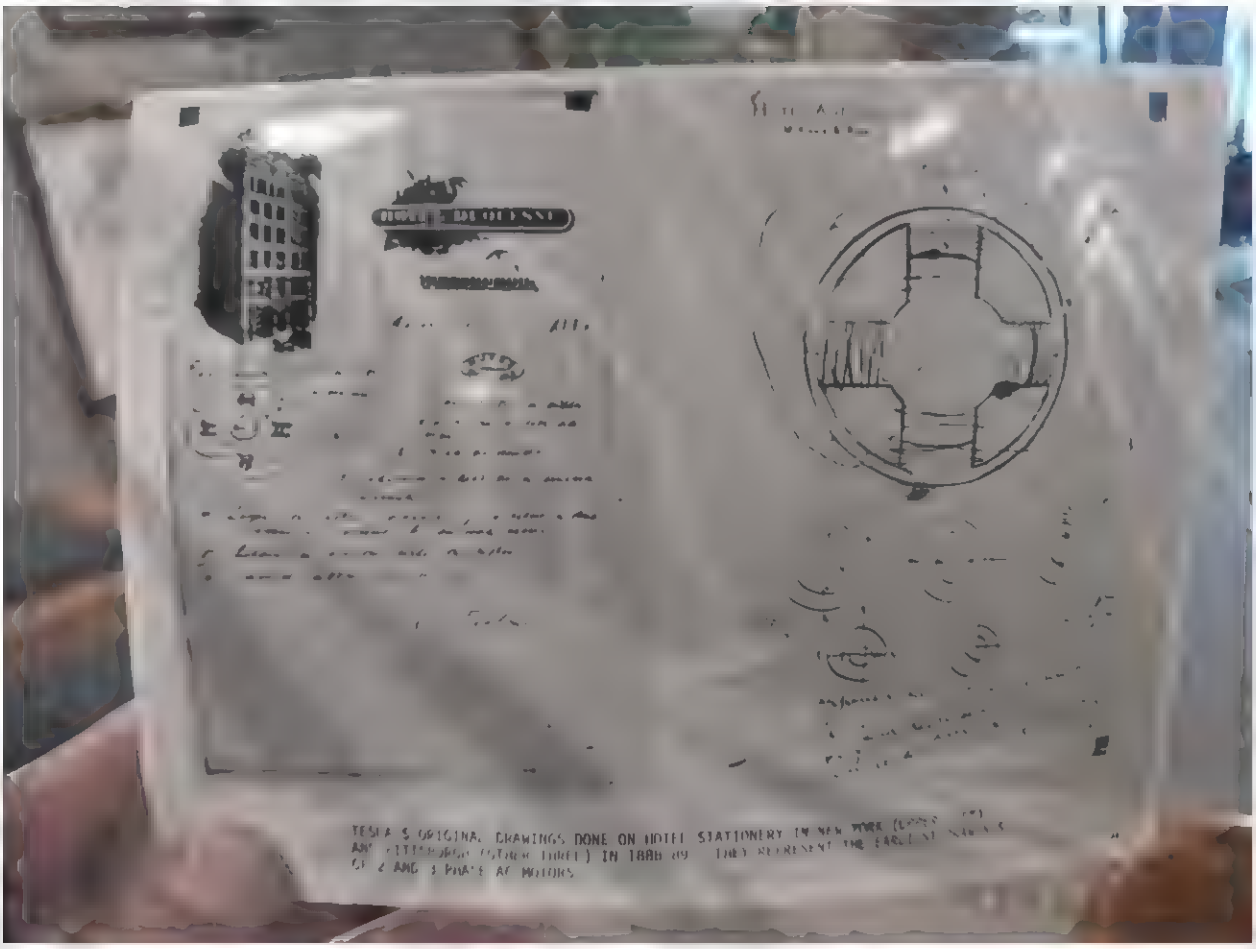
COUNTERSIGNED & REGISTERED

Rahway N.J. this 2 day of January 1886

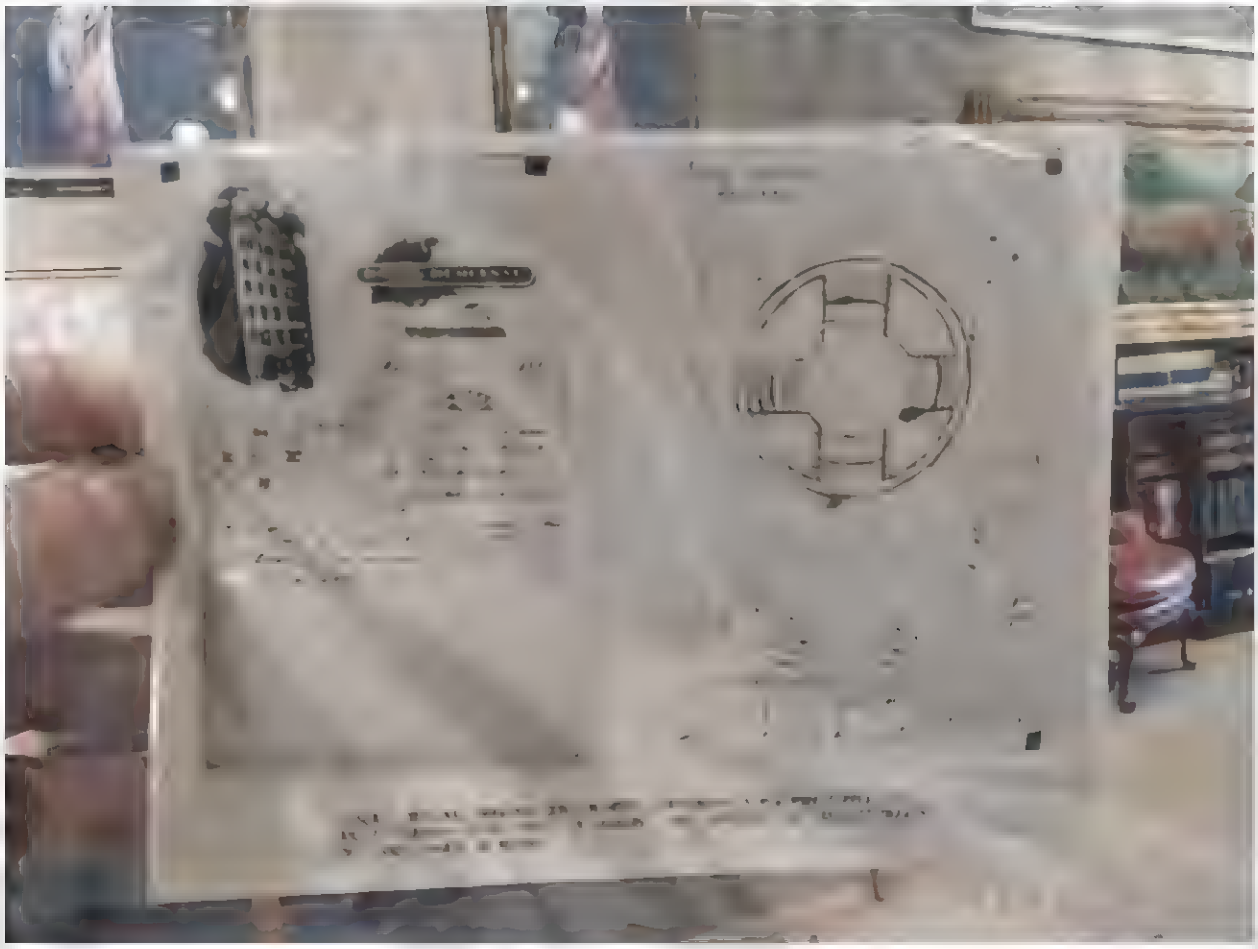
TREASURER

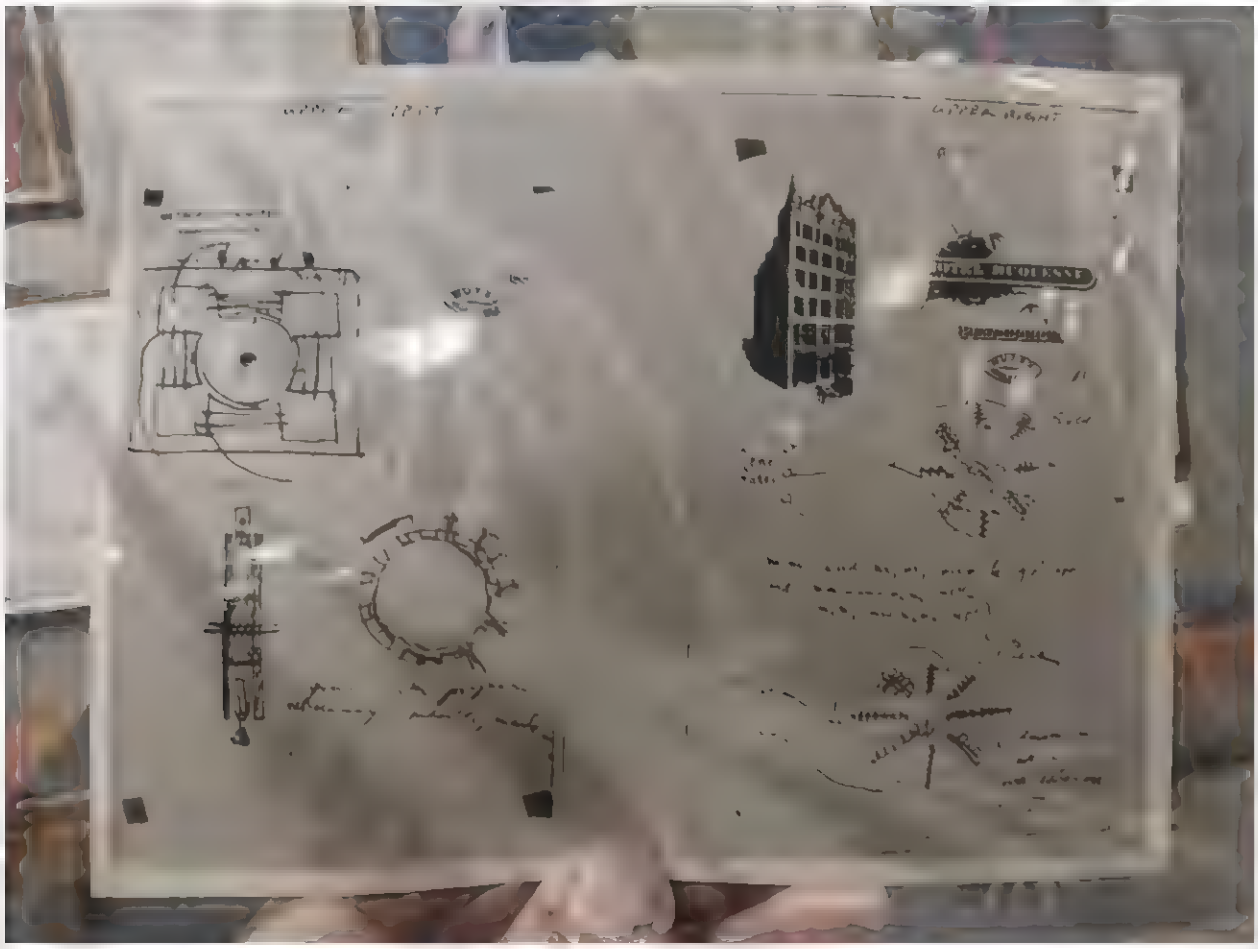
PRESIDENT

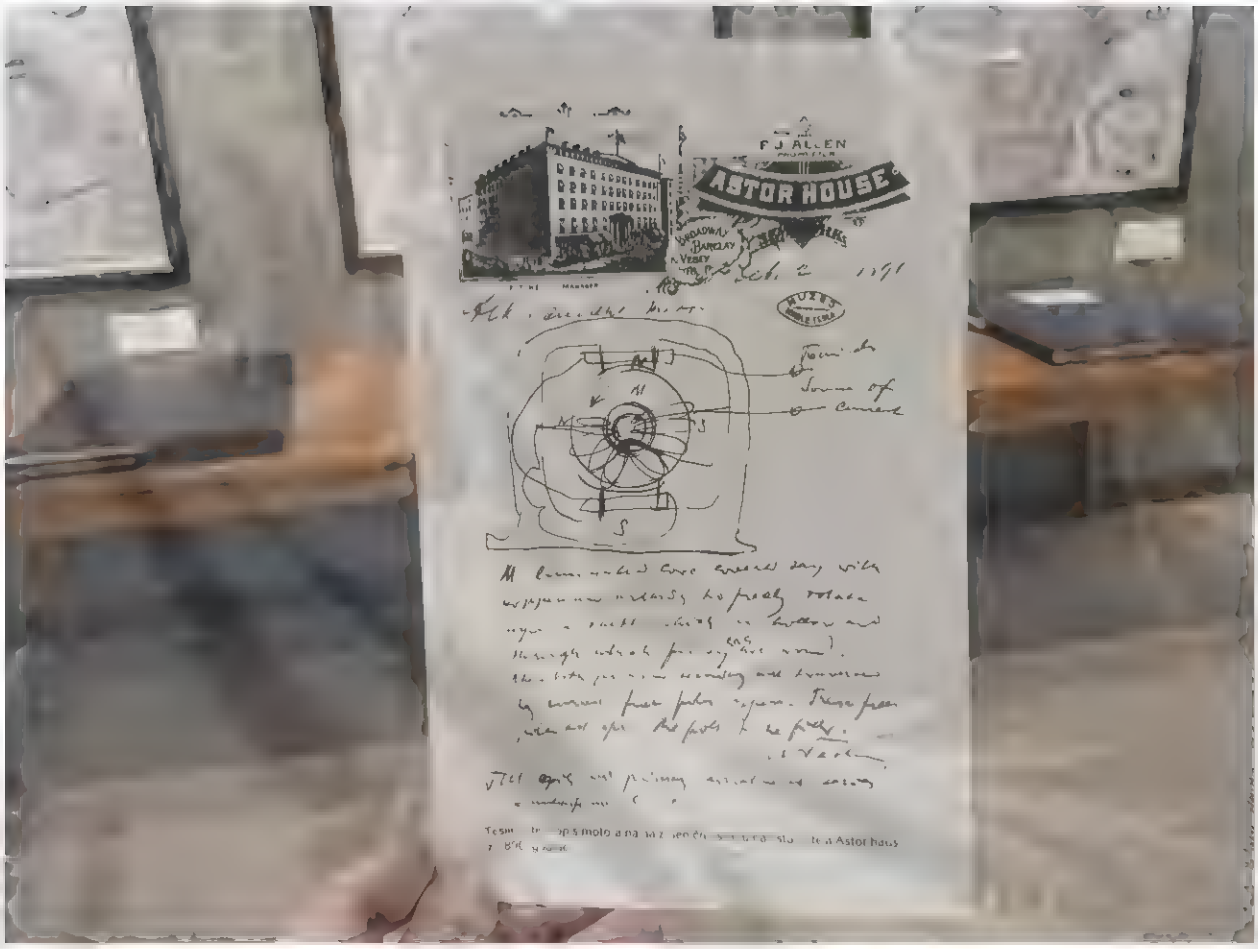
FULL PAID AND UNASSESSABLE


TESLA'S ORIGINAL DRAWINGS DONE ON HOTEL STATIONERY IN NEW YORK
AND PITTSBURGH (WITH THREE) IN 1888 ON THEY REPRESENT THE EARLIEST
OF 2 AND 3 PHASE AC MOTORS

Teslin crtež i opis motora na naizmeničnu struju na listu hotela Astor haus iz 1890. godine.






F J ALLEN
ASTOR HOUSE
BROADWAY
BARCLAY
VESEY
Source of
Current

New York, [illegible]

[illegible] Westinghouse, Jr., Esq.

Pittsburg, Pa.

My Dear Mr Westinghouse:

As per appointment, I called upon Mr Brown and examined, and found that he, and a party by the name of Peck (whom I imagine to be a lawyer) are the owners of the Tesla patents pertaining to motors. Under a separate cover and by special delivery stamp, I send you copies of these seven patents, together with a copy of the report by Prof. Anthony on the apparatus, which, it is claimed, is covered by the patents in question.

Being in a great hurry, I am dictating this letter to you through Capt. Carden's stenographer, as I have not time to write it myself, legibly.

Brown and Peck took me to a place on Liberty street, where I was introduced to Mr Tesla, Mr Hubard being in company with the, and I was shown a great mass of apparatus, among which were ~~consisting~~ ~~of~~ five or six motors. Mr Tesla struck me as being a straightforward, enthusiastic, sort of a party; but his description was not of a nature which I was enabled, entirely, to comprehend. However, I saw several points which I think are of interest. In

M. F. WARDEN
COUNSELLOR AT LAW
ROOM 608,
MUTUAL LIFE BUILDING
NASSAU, CEDAR & LIBERTY STS.

New York,

the first place, as near as I can get at it, the underlying principle of this motor is the principle which Mr Shallenberger is at work on at the present moment. The motors, as far as I could judge from the examination which I was enabled to make, were a success. They start from rest and the reversion of the direction of rotation can be accomplished suddenly without any short-circuiting. They were small affairs, and were claimed to develop in the neighborhood of a half a horse power. They were very neat in workmanship and in appearance. Among the other notions which Mr Tesla showed me, was a little disc, mounted almost identically as Mr Shallenberger's first experimental disc was mounted, which Tesla showed would commence rotating so soon as it was brought in the neighborhood of a circuit through which an alternating current was flowing, and also that its direction of rotation would reverse according as its position with relation to the wire through which the current was flowing was changed. Another device which he had in operation in order to show the principle of his motor, consisted of a disc of sheet iron mounted on a shaft, which shaft ran in journals and around the outer edge of the disc was a stationary annular ring of laminated iron wound with wire similarly to the armature of a Gramme machine. When a current was sent

H. R. DUNCAN
ATTORNEY AT LAW
[illegible]
[illegible]
MASSACHUSETTS & [illegible] CITY STS

New York,

thro h the wire the sheet iron disc would start [illegible] and maintain a prodi ious speed. Mr Teel explained that in the practical operation of his motors, he proposed to use three wires all carrying alternating currents, two of the [illegible] connections from the wires, either primary or secondary, of an ordinary alternating circuit, while the third would be a wire carried directly from a sort of secondary winding applied to the armature of the machine. In order to avoid giving the impression that the matter was one which excited my curiosity, I made my visit short and after leaving the room in which the apparatus was working, took Brown and Peck to 17 Cortlandt street, where they stated that after having heard nothing from us for some three weeks after first communicating with Duncan, whom they supposed was our representative, they had carried on negotiations with certain strong capitalists represented by Mr Butterworth, of San Francisco, and whom I ascertained was the same party who last spring negotiated with us for use of our system and the Teel was in San Francisco. Brown and Peck expressed a desire to deal with us, if possible, but say that unless we can let them know by ten o'clock, Friday of this week, whether or not we propose, seriously,

COUNSELLOR AT LAW.
ROOM 608.
MUTUAL LIFE BUILDING
CEDAR & LIBERTY STS.

New York,

looking into the matter, they will accept Butterworth's proposition, which they told me was a payment in short-term notes of about Two Hundred Thousand Dollars, and a royalty of $[illegible] per H. P. The terms, of course, are monstrous; and I so told them; and they replied that they could not possibly hold the matter over longer than the date mentioned. I told them I thought there was no possibility of our considering the matter seriously, but that I would let them know before Friday. I would suggest that if you are unable to come here yourself, that Mr Kerr and Mr Schallenberger come on Tuesday night. Please advise me by telegraph onreceipt of this. They allege that Prof. Anthony has now joined the syndicate represented by Butterworth, and who proposed paying the enormous figure mentioned for the patent.

I have important matters to look after to-morrow, or otherwise would have come home to-night.

Very respectfully yours,

A. McDougall

Westinghouse
Electric Corporation

[redacted]

April 2, 1983

Dear Leland:

It was good to hear from you and have your reminder that I had neglected to send you the Byllesby letter. On resurrecting it, I find I misled you as to the word "preposterous." As you will note, the word was "monstrous." The underscoring, by the way, is not mine.

Looking at the letter now, I feel certain that if I were to ask anyone in our management hierarchy if it is all right to send you a copy of the letter, I'm sure the answer would be "no," particularly if a lawyer were involved. But I'm taking the chance on sending this to you for framing (a fairly big frame), with the understanding that it is not for publication. Should anyone visiting your study start making notes from the letter, you had better have them get in touch with me before thinking of publication.

The thing we have to remember is that the $2.50 figure is only in a memorandum of agreement; the only signed agreement makes no reference to the royalty. So much for that.

It's interesting that you mention IEEE's 100th. As a matter of fact, I will be in Orlando Monday (April 11) speaking to the Southeastcon '83, on the subject of the Westinghouse Centennial. As part of the conference they are having a session on Electrical Engineering History.

All the best!

Charlie Rush

P.S. Thanks for the congratulations on my 45th anniversary. As it happens, I will be in Orlando on the day I began, 45 years ago.

capital, for all the Baar would be a dividend & leave them still debt to me 60 or 70,000.

#

2. Rerserve Sheri but sell evrything else to them for 6% on capital & a share of possible profit. They assuming my responsibilities & my slavery to a lunatic.

#

3. Wait until this other matter determines itself successfully; then collect what comes in from Sher, make my capital intact, let the old regime return Apl. 1 & go unassisted to destruction.

#

I prefer No. 3.

#

1. If by Dec. 31 Sher proves to be unprofitable, demand a reconstruction of contract placing power in my hands where it belongs. Refusal? Go into court.

2. Demand dissolution. Go into Court.

#

Can I be held for debts made beyond the capital?

#

I will buy out or sell out.

#

Since the spring of '86, the thing has gone straight down hill toward sure destruction. It must be brought to an end Feb. 1 at all hazards. This is final.

#

Nov. 1, 1888. I have just seen the drawings & description of an electrical machine lately patented by a Mr. Tesla, & sold to the Westinghouse Company, which will revolutionize the whole electric business of the world. It is the ~~first~~ most valuable patent since the telephone. The drawings & description show that this is the very machine, in every detail which Paige invented nearly 4 years ago. I

furnished $1,000 for the experiments, [illegible] invention. We tried a direct current--& failed. We wanted to try an alternating current, but we lacked the apparatus. The $1000 was exhausted, & I would furnish nothing more because I was burdened in the 3 succeeding years with vast expenses on the Paige type-setting machine. Tesla (& Thompson?) tried everything that we tried, as the drawings & descriptions prove; & he tried one thing more--a thing which we had canvassed--the alternating current. That solved the difficulty & achieved success.

Clarence must give market report--American heiresses buying up rotten dukes. Character as well as title considered in the market, & discounted accordingly.

Who the duke married first--next--& so on--causes of divorce. Disease--but can't name it.

<Buy hearts counters>

(Jerusalem) "Well, the Savior's been here once!")

<To start with, 5 m.--no orders. 1 m sh at 5 each 5000,000. Each 1000th is worth $5. After 500 orders, $10--aftr 1000 15 after 10,000 500>

Ich werde Ihnen <ein> 1/500 von dem Ganzen um $10,000 [illegible] (basis, $5,000,000.

Nach <1000> <orders> 500 Bestellen, um ~~$10~~ <$30,000> $15,000. (Ground, 10,000,000.

Nach 1000, um $20,000. (Gr. 15,000,000)

" 1500 " 25,000 (" 20,000,000

" 2000 " 30,000 (" 25,000,000) OVER

<Written at right angles over preceding paragraph.>

UNIVERSITY OF CALIFORNIA, BERKELEY

BERKELEY · DAVIS · IRVINE · LOS ANGELES · RIVERSIDE · SAN DIEGO · SAN FRANCISCO · SANTA BARBARA · SANTA CRUZ

THE GENERAL LIBRARY

Dear Mr. [illegible]:

I was [illegible] to hear from you [illegible] Tesla---as [illegible] I might well have missed them. I [illegible] you sent. I have checked our files to see [illegible] from Tesla to Mark Twain, but I [illegible] any. If I can be of any assistance to you [illegible] you are doing on Tesla, I hope you will let [illegible] a very few references to Tesla in Mark Twain's [illegible] perhaps in other places), but the only [illegible] moment is 1 November 1888. I am sending [illegible] typescript copy of the note in the context [illegible] the period. This notebook will appear in volume [illegible] Mark Twain's Notebooks & Journals which we are now editing for publication by the University of California Press.

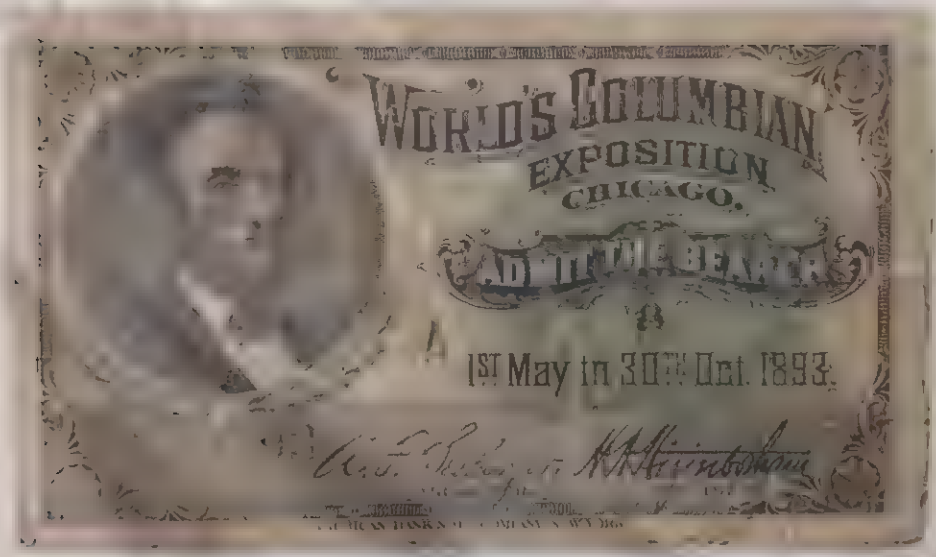
Sincerely yours,

F. A. Anderson

Frederick Anderson
Editor - Mark Twain Papers

Dr. Leland I. Anderson
141 Vine Street
Denver, Colorado

80206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ADMIT THE BEARER
1st May to 30th Oct. 1893.

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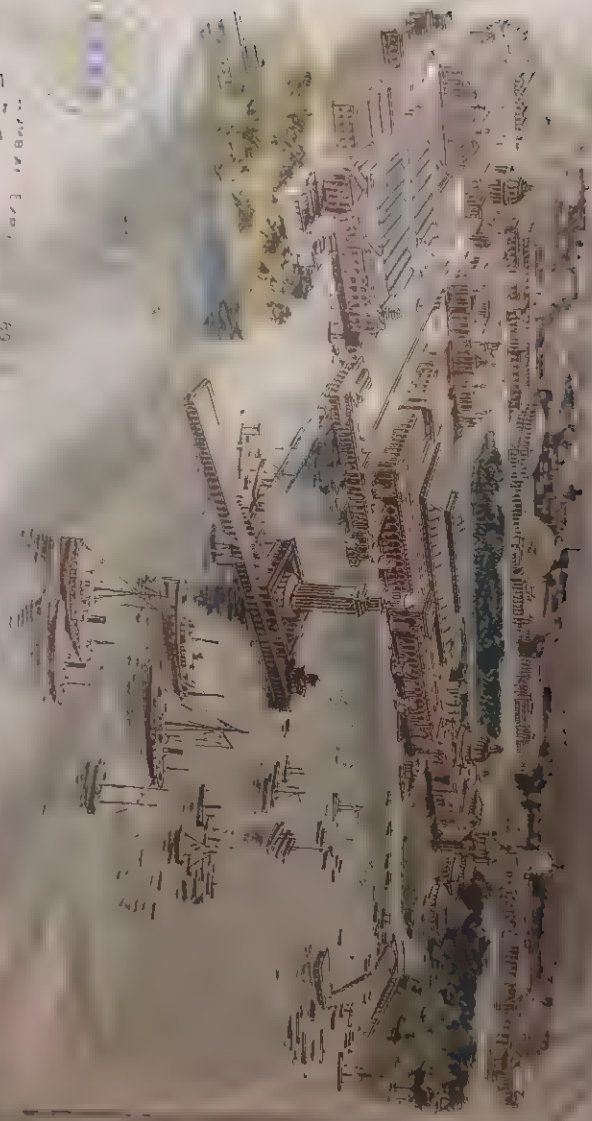


of July 17.
identity of "Fodor
Stojanovic of Belgrade,
21, 1954. The accession
man, but I
Denver,

THE LIBRARY OF CONGRESS

WASHINGTON [illegible]

August [illegible], [illegible]

Dear Mr. Anderson

This is in repl[illegible] to your letter of [illegible].

I regret that we do not know th[illegible] identity of [illegible]dor. The letters t[illegible] were part of a gift of Mr. Spas[illegible] [illegible] Delmade, Nevada, and were received in the Library [illegible]n January [illegible]. The accession record mentions that Fodor was translating Tesla's lectures into German, but I expect that information was taken from one o[illegible] the letters.

You have photocopies of all of the Tesla letters known by me to be in our collections, but of course there [illegible] others which I have not noticed. Your photocopies are enclosed.

Yours sincerely,

Ronald S. Wilkinson

Ronald S. Wilkinson
Manuscript Historian

Enclosure

Mr. Leland I. Anderson
2525 South Meade Street
Denver, CO 80219

2525 South Meade Street
Denver, Colorado 80219

July 17, 1987

nuscripts

has four letters in its collection
tached). I am anxious to learn the
/9/92 letter, it's possible that
f Tesla's lectures into German.
found that Fodor is published.
entions sending Fodor a cable (to
Perhaps the provenance of these
p as to the identification of
information t[illegible]

rs (at least 15!) since I queried
!dings of Tesla manuscripts. I

.ached)
xchange of 15 letters from

ers of 9/29/15, 10/8/15, and

' 8/28/01, 8/30/01, and 9/13/01).

dings than these (excluding the
ears ago from the Muzej Nikole
e advised of them.

Sincerely,

Leland I. Anderson

Leland I. Anderson

20

letters
odor.

Mr. Leland I. Anderson
2525 South Meade Street
Denver, CO 80219

THE LIBRARY OF CONGRESS
MANUSCRIPT DIVISION
WASHINGTON, D. C. 20540

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PENALTY FOR PRIVATE USE, $300
500

2425 South Meade Street
Denver, Colorado 80219

July 17, 1987

Dr. Ronald Wilkinson
Manuscripts Division
Library of Congress
Washington, D.C. 20540

Dear Dr. Wilkinson:

Subject: Nikola Tesla manuscripts

[illegible] Manuscript Division ha[illegible] letters in its coll[illegible] [illegible] to [illegible] copy [illegible] attach[illegible]. I am anxio[illegible] to learn [illegible] [illegible] of Fodor. From the 9/9/[illegible] letter, [illegible] possible that Fodor served as a translator of Tesla's letters into German. From the 11/[illegible]/[illegible] letter, it's found that [illegible] published. From the 1[illegible]/[illegible] letter, Tesla [illegible] English or [illegible] [illegible]). [illegible] available (to [illegible] letters might provide [illegible] value as to the identification of Fodor. I would [illegible] any information that [illegible] to provide.

It's been a number of years (at least 15!) since I queried the Manuscripts Division on holdings of Tesla manuscripts. I have copies of the following:

Fodor (four letters as attached)
John Hayes Hammond, Jr. (exchange of 15 letters from 10/13/10 to 2/13/14)
Benjamin F. Miessner (letters of 9/29/15, 10/8/15, and 11/8/15),
Stanford White (letters of 8/28/01, 8/30/01, and 9/13/01).

If there are any additional holdings than these (excluding the microfilm rolls received some years ago from the Muzej Nikole Tesle), I would be pleased to be advised of them.

Sincerely,

Leland I. Anderson

Leland I. Anderson

Attachments: Copies of four L/C letters from Tesla to Fodor.

New York March 19. 1893.

My dear Ed.

I have received both your letters of Feb. and Feb. I really have written to you before this, but every moment of my time was taken up and besides, my health has not been satisfactory. I am now preparing my lecture on Lightning-phenomena, of which I shall send you a copy post as soon as it is ready. I shall also have the Pulsator-Circuits of your book which I have not received as yet as soon as possible.

Yours sincerely
N Tesla.

New York Jan 1 1892

My dear Fido

I am sorry about the long delay in forwarding to you the manuscript. A few days after it was mailed, I believe, I cabled to you and trust that you have received my dispatch. I also hope that no material disadvantage has resulted from the delay. With to-day's mail I send you a copy of my abstract which has just appeared in the "Proceedings" of the Royal Institution. It may give you a better insight into some ideas which I have advanced.

Yours sincerely
N Tesla.

New York Nov 2/1892

My dear Fodor,

Your letter of 12 inst. and manuscript was received in due course.

I shall return the latter as soon as possible.

Thank you for your friendly interest and good opinion and hoping that your book will meet with a success such as will fully repay you for the pains taken, I remain

Yours truly

N Tesla.

New York Sept 6 1892

My dear Editor

It is only now on my return from abroad that your fav. of April 28 has come to my hand. I am not well at present and have received a letter from you like this, as you infer, I certainly would have answered it. I am pleased to learn that you have thought it worth while to translate my lectures in German, I am convinced that the translation will be a good one. If I can aid you in any way I shall do so with pleasure.

Yours sincerely

Nikola Tesla

I send copy of my London lecture with same book.

The Gilsey

STRICTLY FIRE PROOF

FAMILY HOTEL

27TH ST BETWEEN BROADWAY & 6TH AVE

CHARLES & DERLACH PROPRIETORS

New York Sept 2 1892

My dear Editor

It is only now on my return from abroad that your note of August 25 has come to my hand. I see you will have received a letter from me before this, as you infer, I certainly have answered it. I am glad to learn that you have thought it worth while to have my letter in Gunsaulus's paper. I am convinced that the next book will be a good one. If I can aid you in any way I shall be very glad.

Yours sincerely

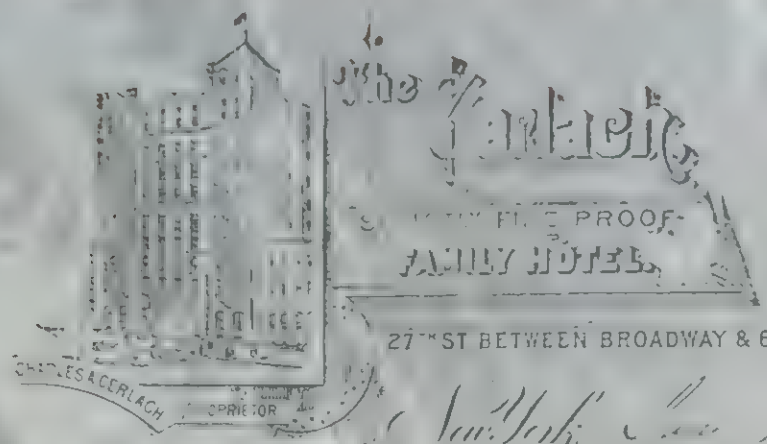
Edward Bellamy

I send copy of my Boston address with the book.

[illegible]

[illegible]

[illegible]



New York, Nov 1 1893

My dear Fodor

I have today sent the long delay in forwarding to you the manuscript of your day's paper at last arrived, I believe, I owed to you and trust that you have received my dispatch. I also hope that the inconvenience and trouble from the delay this holiday's mail I send you a copy of my abstract which has been appointed to the "proceedings" of the Royal Institution. It may give you a better insight into some ideas in it I have advanced

Yours sincerely

W. Tesla.

New York, Oct. 2, 1892

My dear Fodi,

Your letter of 15th and manuscript has arrived safe and sound.

I shall return the latter as soon as possible.

Thank you for your kind words and good opinion and hope that you will be able to succeed again, as I'm already sending you for the finest women, I remain

Yours truly

H. Tenta.

Njegovan, Vladimir. NIKOLA TESLA - HROJ [illegible]
Prosvjeta, Zagreb, 1950. Pp. 64.

Page 29:

(Narrative previously, p.28, says that Tesla after his lectures in London and Paris, visited Gospić to see his ailing mother, who died in his arms.)

This letter (Gospić), April 21, 1892, "in black border" is a reply to one received from one of the mother's brothers. It expresses his grief, despite the fact that he foresaw his mother's death, for, considering her [illegible], he hoped she would still live long. -- He is sorry they could not meet [illegible] when he had come to Slavonia, and will inform him when such a meeting can be arranged.

*

Page 29: To Col. Pajo Mandic (care of Hon. Pero Lupa, Esq.) Pomaz, Budapest, Hungary, Europe.

Written at The Gerlach, Strictly Fire Proof Family Hotel, 27th St. between Broadway and 5th Ave., N.Y. N.Y. Feb.20,1893.

Dear Uncle:

(was glad to hear of his uncle's retirement; would have been happy for him to have visited the Chicago Exposition, but "Uncle Peter" had given good advice about the uncertainty of the transportation because of daily train accidents; and again a financial panic such as America had not seen. Things look better now but it will take 2 or 3 more days before the heavy wounds suffered by industry are healed. He has much he could report. At the request of many scientists he lectured before the Science Congress at which he showed the inventions he was currently working on. These are new steam and electric machines, from which he expected great successes. The same is true of his motors, which, because of the bankruptcy of a certain company and poor financial standing, were put to small use; now they are in use and the prospect is very good. If it succeeds, then his invention will be used there. It appears that his system of machinery could be used in the transfer of power at Niagara. In the main, it looks as though some of his ideas will be used in this gigantic project. Were this to happen, he would earn much money; he is not thinking of this, but he would like to help his relatives. It appears to him that he has achieved greater fame than anyone else in his profession; he has received one honor after another, and this encourages him and spurs him on. He envisages that if he could develop only one (thing) practical, the entire world would be affected. -- His health is good. Most of all one misses good wine. He would like to pay well if he could get it in small bottles, since large bottles are inconvenient; he doesn't drink much. "Quality and not quantity."

Regards to family -- good wishes. Your nephew, Nikola.)

• • •

Address: unknown

Letterhead on the paper, as above.

New York, Nov 11, 1938

Dear Uncle:

(He writes only briefly and hurriedly, being greatly occupied by a task. But, God willing, he hopes to see him in a few months. Now he has just completed a new invention over which he is elated. The success is wonderful in every way except monetary. But this is bound to come. If he had enough money to be independent, he could acquire a large possession. In the present situation that he finds himself he will have to take what he gets.)

(There are references to Simo, or Milan, and apparently some ill health where Simo is concerned. He expresses regrets at the uncle's discomfort. He (Tesla) had given him advice beforehand. Hurriedly, Your Nikola.)

* * *

P.S.: To Rt. Rev. Nikola Mandić, Metropolitan, D. Gušla, Vrbas, Austro Hung., Europe.
From Nikola Tesla, 35 South Fifth Avenue, New York, Dec. 8, 1[illegible].

(First paragraph: comment on exchange of letters between them.)

(Second paragraph: Says that his system of machinery illuminated the Exposition; his inventions received the most interesting reactions there; and, as he had stated, his system was being used at Niagara. These are: [illegible] of steam power machinery for the conduction of electricity. His lecture [illegible] an indescribable impression. It would be difficult to convey how [illegible] he was in the scientific world today. He has received many letters from the [illegible] men (in the field) recommending that he modify (perhaps, lessen) his work. Nor there are plenty of scholarly (?) people but a small number of these with [illegible]. This, instead of diverting him from work, creates further enthusiasm. He expresses his feelings on the day he received an autographed photograph, "From Edison to Tesla.")

(He is working night and day on something that he feels will be of inestimable value to mankind, but he is afraid his powers will fade before he finishes it; this is something difficult for him to explain) (It is rather vague as to which part of his statement he is referring here. M.M.)

(A book is being published, describing his collected works. This was assembled by one of the leading writers in the technical field. The book is dedicated to his countryman. The uncle will receive a copy, but, unfortunately, it is in English.)

(Family greetings and congratulations "on your success." Your nephew, Nikola.)

P.33: Address: Unknown

From: The Gerlach (as above) N.Y., Jan.28, 1894.

Dear Uncle:

(He comments upon not having time to write, then states that the ring [illegible] sent to the uncle - which he is awaiting as "the Jews (await) the Messiah" has not reached him yet.)

(He has much news. His system is being used at Niagara. His new invention, called "oscillator" is progressing splendidly and the entire outlook is good. As concerning the "machinery", ie, the physical health it is not exactly ideal's, but it could be worse. (This allusion is undoubtedly alluding to the health of a friend or family member).

(He hopes that the influenza has not been harmful. The Americans do not worry about such things as the influenza. They take a large glass of whiskey, dissolve from 10 to 20 grams of quinine in it, then go to bed, sleep, and in the morning they are as well as a steel ingot. Try this and you will see [illegible] will not have influenza.)

(Does not have time to write to Maria.)

(He has sent the book describing his works. He has sent a copy to every [illegible] and uncle. The book is enjoying success and is in the second edition.)

(He is hoping to see them on a business trip to Europe. All his doctors and friends are advising him to stop working, but this is difficult for him until his work is finished.)

* * *

P.34: To Hon. Colonel Paul Mandić (k.k. Oberst)
Varasdin Hungary Europe
from: The Gerlach (as above)
New York, April 13, 1894

Dear Uncle:

(Writes briefly, only to inform that there is still no wine, so that all the bottles sent by him - i. e., this Uncle - and those sent by Uncle Trivun must have broken. - Do not send me Dalmatian (wine) in the small barrels; I have experimented with this and it does not go. The only way would be to send Magyar wine in bottles. - Not long ago he got a gold medal from Franklin Institute for his accomplishments; some university has offered him a Doctor of Philosophy degree. He knows this will interest him. Everything looks fine now. He is progressing well with some invention and he hopes to finish it soon so that he can take a rest.)

(Greetings from Your Nikola.)

P. 34. Address of person to whom writing not given.

New York, May 17, 1894

Dear Uncle:

(He is answering to his and Maria's letters hurriedly, for time is [illegible].)

(Don't worry about the wine. - He got hold of something similar, - some [illegible], not as good, but it could be worse.)

(He intends to go there soon, and it would please him if [illegible] so that he could visit him.)

(He will send the Pari[illegible]ook (Perry?) some day, and is sending [illegible] large magazine, Century, which has some translations of Zmaj's poetry. - By this success I judge that Serbia profited more by thise articles than from my work in the field of electricity. (I am not clear whether this means that he translated the poems, for he uses "article" in the second part of the sentence. M.M.)

(He is progressing well, and one new machine for illumin[illegible] He hopes for much success when this will be put into op[illegible].)

(Family greetings. - "I would write to Maria, but I cannot bring myself to enter into correspondence with ladies.") Your Nikola.

* * *

P.35. On May 13, 1895, there was a big fire in Tesla's laboratory in New York, which destroyed not only all his apparatus but everything that was of historical and of similar interest for Tesla's work. This fire caused tremendous and irreparable loss to Tesla. Only his unusual nature enabled him to survive it. In an interview to the Electrical Review, Tesla said:

"Everything is lost, not only what had importance for new works; more, and all that had personal value."

The Sun wrote:

"The downfall of Tesla's laboratory in New York is a misfortune for the whole world. It is not an exaggeration to say that there is not a more important person for mankind today than this young man."

This and similar expressions gave Tesla the moral support to begin the construction of a new laboratory, which began functioning in 1896.

(Abstracts of letters and transl[illegible] Archives, Ju[illegible], 1[illegible])


The Gerlach
FAMILY HOTEL
Nos 49, 51, 53 & 55 West 27th STREET
GERLACH
PROPRIETOR

NIKOLA TESLA,

35 South Fifth Avenue

COLUMBIA COLLEGE
IN THE CITY OF NEW YORK

PRESIDENT'S ROOM Feb. 5th, 1894.

To the Trustees:

I take pleasure in suggesting for the honorary degree of LL.D., Mr. Nicola Tesla of this city. In this connection I transcribe an extract from a letter from Prof. Osborn, bearing upon this subject as well as upon my earlier suggestion that the honorary degree should be conferred upon Mr. G. W. Hill.

Respectfully,

[illegible]

President.

Extract from Prof. Osborn's letter.

"I have especially upon my mind two matters which I think will appeal to you very strongly. The first is connected with Mr. Hill of Nyack, and the second with Mr. Tesla of New York. I have learned recently that Mr. Hill is considered the leading Mathematician in this country, and there seems to be little doubt that Mr. Tesla is the leading Electrician. They both are in a measure connected with Columbia through Mr. Hill's lectures here, and through the fact that Mr. Tesla at Professor Pupin's and Professor Crocker's invitation gave his first electrical lecture in Columbia. So that

[illegible] sympathetic relation with these great men. I spent an afternoon recently with Tesla, and regard him as one of the most distinguished men I have ever met. I happened to meet Moore or Crocker shortly afterwards, and learned from him that he had spoken to you in regard to giving Tesla an Honorary Degree. I would like to support this in the most earnest manner. Poulton tells me that Tesla was covered with honors while in England and France. We certainly must not allow any other University to anticipate us in honoring a man who lives under our very walls."

Prof. of Biology at Oxford.

EDITORIAL DEPARTMENT
THE CENTURY MAGAZINE
UNION SQUARE NEW YORK

EDITOR
EDITOR

May 17. 1894.

1894.

Dear Osborn:

I send you with this Martin's book on Tesla's inventions and writings together with his article in the Century — the article containing Martin's biographical sketch of the inventor and the other Tesla note on Zmai with my "paraphrases" after his prose translation.

There would be a fitness — appropriateness in Columbia giving him a degree since his first lecture was if I mistake not delivered at the College and since New York City is the seat of

important Dis-
[illegible] his work for several
[illegible] degree would be commensurate with the
[illegible] importance of his work and his
rank in his profession. I think it may
[illegible] that there are few men
[illegible] unique position he has in
[illegible] theoretical and practical fellows
[illegible] work, and hardly any whose
[illegible] more for the amelioration
of the hard conditions of life after the war.
[illegible] Having been a great deal
[illegible] during the last six or seven
I have been deeply impressed with the
scientific and scholarly temperament of
the man. I have never heard a word
of a scientific nature mentioned in his
presence upon which he did not seem
to be thoroughly well informed. As you
doubtless know, he is on terms of intimate
friendship with Crookes, Helmholtz, Lord
Kelvin & others. Very few, his friends, but
I need not enlarge on his scientific rank
or standing, for they are too well known.

As to his general culture, I may
say that he knows the language and
is widely read in the best literature of
Italy, Germany and France as well as
much of the Slavic countries, to say
nothing of Greek and Latin. He is a fine
linguist, I do not think, and is [illegible]
[illegible] conversation in Spanish or [illegible]
or the Scandinavian [illegible]. I have

EDITORIAL DEPARTMENT
THE CENTURY CO.
UNION SQUARE, NEW YORK

[illegible] was, of course, [illegible] of [illegible] attitude, or such [illegible] [illegible]. He is not much in [illegible] in art affairs, but is [illegible] of nature. Worth of all he is devoted to his profession with an intensity I have not seen equalled.

As to his character it is one of distinguished sweetness, sincerity, modesty, quietness and force, as you yourself have seen enough of him to know.

Faithfully yours,

R. U. Johnson

Prof. H. F. Osborn.

The New York Public Library
Astor, Lenox and Tilden Foundations
Fifth Avenue and 42nd Street
New York, N.Y. 10018

Leland I. Anderson
1709 Eldridge Avenue West
St. Paul, Minnesota 55113

Dear Mr. Anderson:

Your letter of December 6th has come and I wish to reply promptly regarding T. T. Munger, a figure involved in the attempt to secure an honorary degree for Tesla.

This is undoubtedly Theodore Thornton Munger (1830-1910). You will find a biographical sketch of him in The Dictionary of American Biography. It will establish his [illegible] relationships (Class of 1851, also graduate of the Divinity School) and his influential position as pastor of United Church, one of the three churches which stand on New Haven green.

A letter to Yale Library would receive a quick solution of Professor Hastings' identity, you may be sure.

Yours truly,

[illegible]

Robert W. Hill
Keeper of Manuscripts

St Louis, April 10 1893

My dear Mr. Broughton,

I need not assure you that I feel much indebted to you for your valuable help at the occasion of my lecture in St. Louis.

I beg you to accept the photo which I enclose as a proof of my friendly feelings towards you.

Very truly yours

H. P. Blavatsky

H. S. Broughton Esq.

THE GERLACH

New York, April 10 1893

My dear Mr. Broughton,

I need not assure you that I feel much indebted to you for your valuable help at the occasion of my lecture in St. Louis. I beg you to accept the photo which I enclose as a proof of my friendly feelings toward you.

Yours sincerely

N Tesla.

H. P. Broughton Esq.

(Enclosed photo enscribed "To Mr. H. P. Broughton
with sincere regards
from Nikola Tesla")

[illegible]

[illegible]

[illegible]

W2IR
WM. G. BROUGHTON
1038 [illegible] Blvd
Schenectady, N.Y. 12308

May [illegible], [illegible]

Mr. Leland I. Anderson
[illegible] South Meade St.
Denver, CO 80219

Dear Leland:

Your AWA Monograph No. 4, "Priority in the Invention of Radio," is the only publicity I have seen that addresses directly the [illegible] priority aspect of Tesla's inventive genius. I [illegible] to have it for our Tesla "Collection of Regional History [illegible], boxes [illegible] and 83" in the John M. Olin Research Library at [illegible].

Your Monograph, Martin's book, and others, all mention Tesla's landmark NELA St. Louis lecture in 189[illegible]. This is the one during which, and in a week's preparation for, my father acted as Tesla's sole assistant. Many times I have listened to father's glowing accounts of his pleasant association with Tesla in this work. My dedication speech* touches upon some of the highlights, as I recall them.

It has always piqued me somewhat that Tesla was so magnanimous to George Westinghouse in absolving him from $1,000,000 or more in patent obligations. In his later distraught financial straits, Tesla could have made good use of this well deserved bonanza.

Congratulations to you for continuing to help build an impeccable documentation to establish in history Tesla's true stature as one of our few top-flight pioneer radio inventors. Father would like that too, and agree with this needed reevaluation of relative prominence of scientists in the earliest days of wireless.

Best regards,

Bill

Wm. G. Broughton

*Enc,
"W2IR DEDICATION SPEECH"

New York, April 29th, 1899.

46 & 48 E. Houston Str.

Mr. M. J. Strong, M.D.,

711 Franklin Str.,

Philadelphia, Pa.

My dear Sir:-

I regret that under the pressure of my engagements I was unable to answer your letter before this.

If you have an idea which appears to be good, I would advise you to file a caveat and secure it. I shall only be too pleased to offer you my opinion after you have secured yourself.

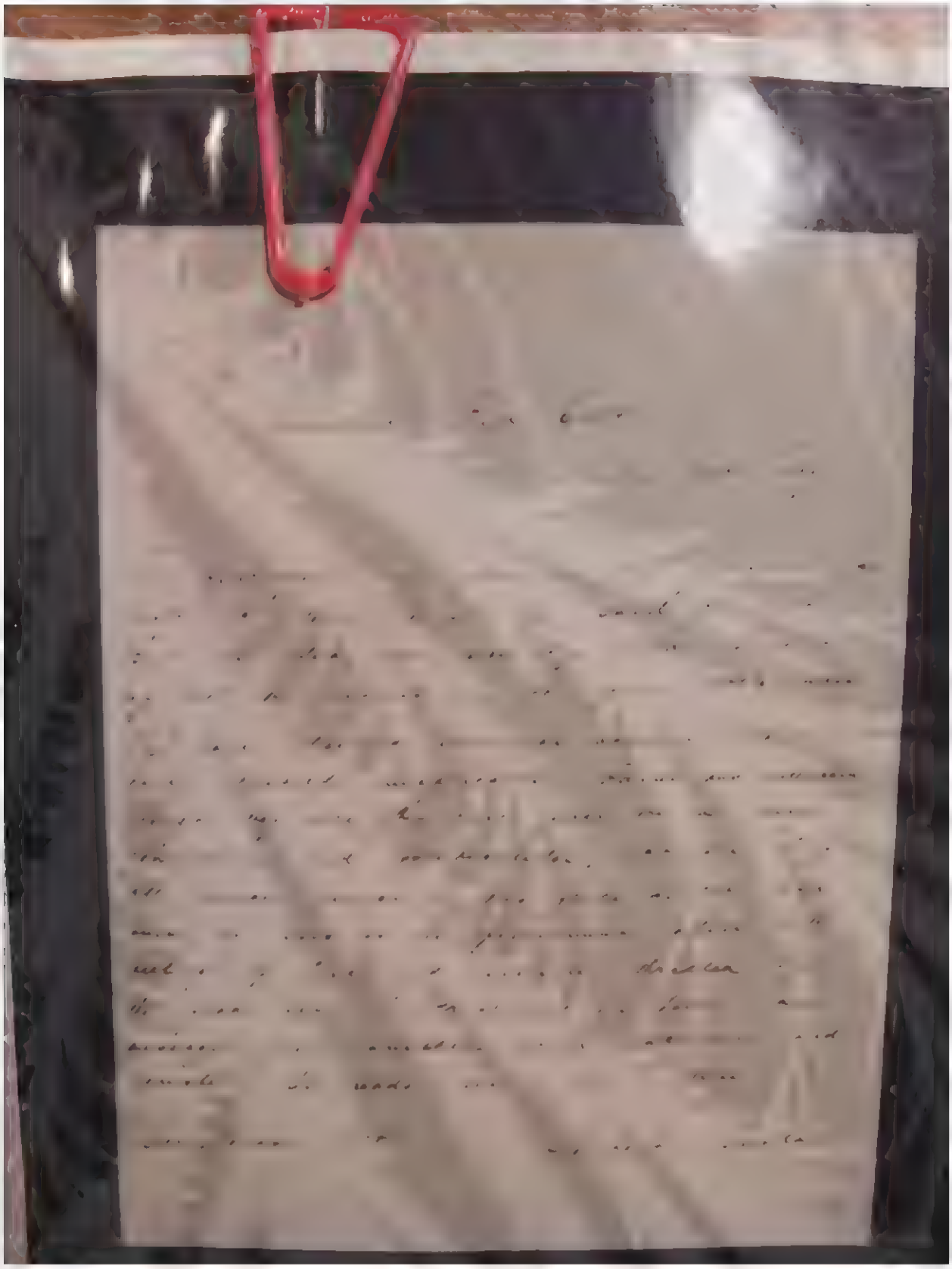
Believe me to be,

Yours very truly,

N. Tesla

THE CAVEAT LAW

Enabled an American privately to disclose his invention. Found useless in protecting patents in the U.S., and a source of annoyance to foreign governments.



New York, Oct. 29th, 1900.

46 & 48 East Houston Str.

Col. J. J. Astor,
840 Fifth Ave,
New York City.

My dear Col. Astor:-

Since I wired you last Friday evening my mind was so much taken up with some thoughts, that I was unable to write, as promised in my dispatch which, I trust, you have received.

You will know that for a number of years, ever since I made my first lecture demonstrations, I have been engaged in the important problem of producing an efficient illuminant. Light is so vital a factor in civilized communities, and the present processes of getting it are so wasteful, and the capital invested in it all over the world is so enormous, that the realization of this task must be considered as one of the greatest benefits which an inventor can confer upon humanity. Lighting by incandescent lamps is an almost barbarous method, inasmuch as we waste ninety-nine and a half percent of the total energy employed; and the arc-lamps, though a little more efficient, are equally, if not more objectionable.

Some time ago an improvement was made by Prof. Nernst, of Germany, who produced an incandescent lamp by coating a wire or filament with some rare oxides. His lamp proved more efficient, and when my advice was asked in regard to it, I recommended it, and it is now being introduced here. Although better than an ordinary incandescent lamp as regards the consumption of energy, it has only a small commercial advantage over the latter on account of some drawbacks, one of which is, that it must be started by an artifice. Besides, the process is still wasteful and the light has the great objectionable features common to other artificial illuminants: It is concentrated, glaring and hurtful to the eyes and is not diffusive, as it should be, like the light of day.

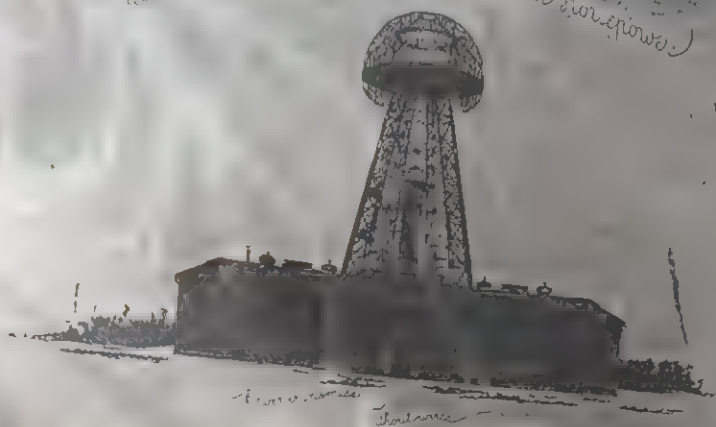
From my first experiments on the world has been looking to me for the production of this kind of light, and you may believe me that, if it could have been obtained by simply trying hard, I would have had it long ago, for this undertaking has consumed much of my midnight oil. The difficulties seemed insuperable, but with the perfection of oscillators I also improved my light, and about two years ago I began to feel sure, that I would succeed in making is commercial. This stage I have finally reached, and when I lighted my laboratory the other evening from a small oscillator, I

saw clearly, that I had developed a system of lighting, with which no other can compete. The light is soft and agreeable to the eye and diffused, just like daylight, penetrating into all the nooks and corners and casting scarcely any shadows. I asked a few persons who had not seen it before, what they thought of it, and each of them independently said, looking around astonished: "It is just like day." This statement is borne out by the fact, that when the lamps are lighted during the day, they can hardly be seen, and yet at night they throw off a flood of rays. This light is also healthful and germicidal and will be an ideal illuminant for dwellings, as well as for streets. The lamps differ from all others, because they never consume, since there is no filament or carbon in them, but only gas inclosed in a sealed glass tube.

The commercial value of this light, if rightly exploited, is simply immense. A hundred great fortunes can be made in introducing it, and you will be convinced of this in a short time, when you see my "artificial daylight" and learn more about it. I am now working out the details of a commercial plant, which I hope to put out, but in view of patent matters I would beg you to keep this information still personal. I am anxious that you should see the light, but please inform me before coming, as otherwise, on account of my absence or some changes that I am making you might miss it.

With kind regards believe me,

Yours very sincerely,



I wish to [illegible] that in connection with the commercial introduc[illegible] rende[illegible] services in the general capacity of consulting ele[illegible]

The near future [illegible] expect with confidence, will be a witness [illegible] revo[illegible] production of that stupendous and transmission of energy [illegible] chemical compounds telegraphy telephony and other [illegible]

In my opinion these advances are certain to follow [illegible] tial and high-frequency currents and novel regenerat[illegible] temperatures.

Much of the [illegible] apparatus will have [illegible] improved, [illegible] believe that while furthering my own investigations I shall be more [illegible] at the disposal of others the knowledge and experience I have gain[illegible]

Special attention will be given by me to the [illegible] of problems requir[illegible] mation and inve[illegible] resource—work coming [illegible] prediction [illegible]

I shall undertake the experimental investigati[illegible] ances the devise of useful expedients and in parti[illegible] for the attainment of de[illegible] results [illegible]

Any [illegible] submitted to and accepted by me will [illegible]

Laboratory, [illegible]
Residence, Wardenclyffe, New York

[illegible] connection with [illegible] transmission of energy over a single conductor, [illegible] I would say a few words on a subject which constantly fills my thoughts, and which concerns the welfare of all. I mean the transmission of intelligible signals or, perhaps, even power, to any distance without the use of wires. I am becoming daily more convinced of the practicability of the scheme, and though I know [illegible] well that the great majority of scientific men will [illegible] [illegible] dream [illegible] have [illegible] perfected apparatus of this [illegible] produced electrical discharges the actual path of which, from end to end, was probably more than [illegible] dred feet long but it would not be difficult to reach lengths one hundred times as great. I have produced electrical movements occurring at the rate of [illegible] [illegible]mately one hundred thousand horse-power, but rates of one, five, or ten million horse-power are easily [illegible] [illegible] were devel-

Story of Development and Application of the ELECTRIC MOTOR

A Pictorial Review of the Motor's Place in Daylight

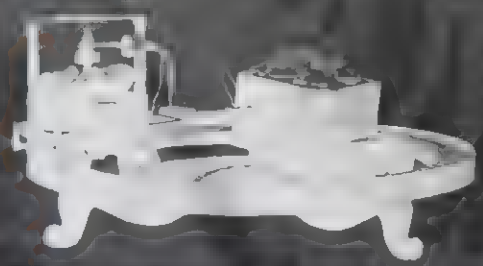
1831 One of Faraday's original models used to demonstrate motor action of current-carrying wire in presence of a magnetic field. In 1820, Oersted had related electricity to magnetism by influence of current flow on a magnetic compass needle. Faraday's lines-of-force theory is still a most useful concept, although some would challenge it. "What Makes a Motor Run" (See ELECTRICAL MANUFACTURING Jan. 1948, p. 107; March, p. 114; June, p. 102; Sept., p. 89, and December, 1948, p. 196.)

MOTOR development may be divided into four [illegible] of electromagnetism; 2—first crude electromagnetic machines; 3—conception of modern dynamo and its reversibility as a motor, and 4—development of modern types. Period 1 was pure science. Period 2 was marked by battery power, a decided deterrent to useful work. Period 3 saw the development of the central station dynamo as a power source for motors; 2 [illegible] conversion of dynamos to motors. Period 4 marked the beginning of large application growth since it led to the development of the squirrel cage induction motor.

Oersted, Ampere and Faraday laid the groundwork [illegible] electric motor theory. In July 1820 the Danish scientist H. C. Oersted related electricity (galvanism) and magnetism by noting that a compass needle takes a position crosswise to a wire carrying a current. Shortly afterward Andre-Marie Ampere laid down laws governing mutual attraction and repulsion of parallel wires carrying current. In 1821 Michael Faraday demonstrated the tendency of a

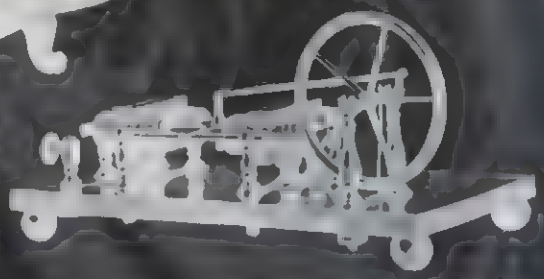
1831 Prof. Joseph Henry's electromagnetic engine, a "philosophical toy", did an useful work but was the first electric motor. Armature oscillated when coil leads alternately dipped into mercury cups connected to wet batteries not shown.

1837 First U. S. patent (No. 132) on an electric motor was issued to Thomas Davenport of Brandon, Vt., on Feb. 25, 1837. Circular railway model shown with battery in use in Smithsonian collection. This motor has two stationary electromagnets, each a armature consisting of a horizontal plane, the other a stationary field connected in parallel. Davenport was not successful in commercializing his invention, although [illegible] productive.



One of several types of reciprocating electromagnetic engines developed by Dr. Charles G. Page. This model was patented in 18[illegible] (No. 10,480). In larger sizes these machines developed over 10-hp and were applied to a locomotive in 18[illegible]. Between 1837 and 1870 when the dynamo electric machine began to take its modern form 16 patents on magnetic engines were taken out by American inventors. Abroad, the first electromagnetic machine was built in 1838 by Prof. Moritz-Herman De Jacobi (Russian) to propel a boat on the Volga.

18[illegible]

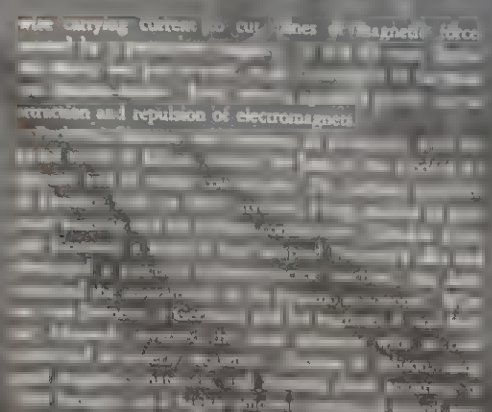


Although its roots go back over 125 years, the practical electric motor is hardly 70 years old; most applications were conceived before 1900.

First Attempt to Apply Motor

wire carrying current to cut lines of magnetic force

attraction and repulsion of electromagnets.



ceramic and motor. Frank J. Sprague, onetime Edison associate, developed the first real commercial motor.

1860 Pacinotti machine a forerunner of modern motor, dynamo. Armature consisted of iron ring with 16 teeth between which coils were wound, separated by triangular wood spacers. Coils ends were brought out to commutator made of 16 brass pieces fastened to a wood spool.

1872 Model of Siemens (Alnwock) drum or shuttle wound armature that was used in early Edison dynamos and motors. Wide air gaps resulted from winding wire directly on drum.

1870 Gramme's ring armature generator, covered by British patent No. 1668 in 1870, was widely copied in this country and generators built as late as 1902. It was patterned after the shuttle wire armature of Siemens (1856) and Pacinotti's commutator.

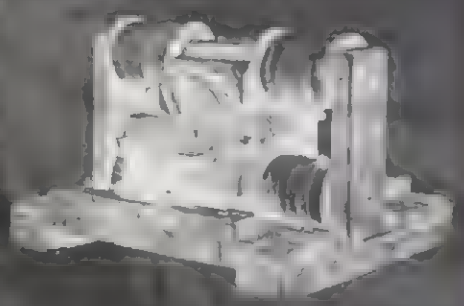
1884 The Sprague motor was the first practical stationary apparatus designed specifically to convert electricity into mechanical energy, instead of being a converted dynamo. This self-regulating d-c motor had shunt winding and differential series coil; maintained constant speed on constant voltage.

1882 [illegible] motors practical in the home and in industry. Edison's Pearl Street Station in New York was put into operation on Sept. 4, 1882. The dynamo shown was rated at 1200 16-candlepower lamps. It was two years before the first motor was connected to the line.

1876 Small plating dynamo designed by Edwin Weston and built by Roberts & Hevel, Newark, N. J., for Condit Hanson & Van Winkle Company. Rated 20 amp, 9 volts. Three-part copper, lead brushes. To prevent field reversal through plating tank battery action, belt-driven mercury cup contact at right breaks circuit when generator is stopped.

1885 Motor designed and built by Thomson-Houston Co. in 1885 was patterned after his dynamo. Had a Pacinotti ring armature with two axial air gaps and used a flyball governor to shift brush positions to compensate for changes in speed and load. Variations of the Brush dynamo were made by General Electric for many years.

1892 First motors made by the Edison General Electric Co. were almost identical with the Edison bi-polar dynamo operated as a motor. Produced in sizes from ½ to 150 hp. Had automatic starting rheostat and self-oiling bearings.



1878 This early high tension dynamo, made by Prof. Elihu Thomson, was a forerunner of polyphase a-c machines since it had both a-c and d-c characteristics. Its three-phase ring winding on armature would generate a-c when picked up by collector rings, but a-c patent claims were disallowed.

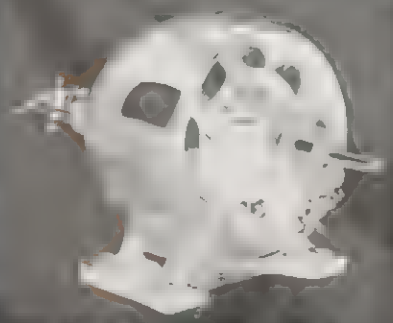
1887 Elihu Thomson's self-starting induction motor [illegible] 1887. [illegible] a shaft at A is based on [illegible] rotor at B [illegible] S connected to [illegible] supply exerts a "repelling" effect on closed coil C. At A, coil C has its two ends shorted through short-circuit [illegible] stator a. A closer [illegible] repulsion of the rotor is [illegible] at C [illegible] S is the stator winding. The basic [illegible] form is illustrated at B.

Basic A-C Forms

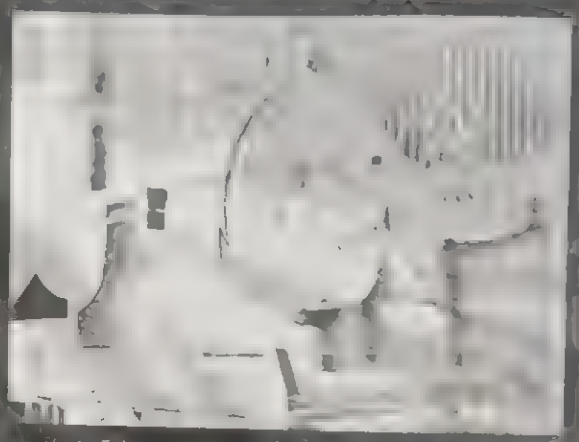
Sketch at right shows Nikola Tesla's earliest conception of a polyphase induction motor in which he introduced idea of rotating magnetic field. Field was a ring of laminated steel disks with four coils supplied from 2-phase generator through four wires. Coils were connected so as to produce N and S poles on opposite sides of ring. Drum armature was provided with two

shorted coils at right angles with or without external connections (squirrel "cage" design). Tesla patented several types of single-phase motors. One produced a difference of phase in the field windings by introducing a resistance in one circuit and an inductance coil in the other. He also patented a motor with condenser in armature circuit.

1888



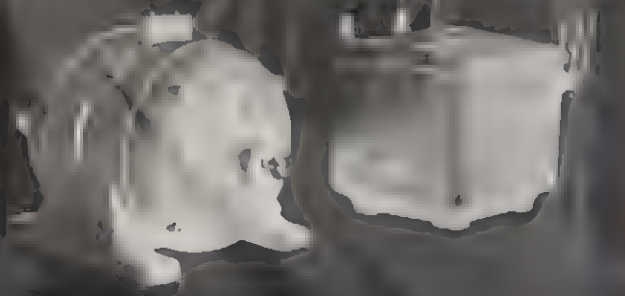
1892 Early form of 8-pole wound-rotor Tesla motor with leads brought out through hollow shaft to slip rings. This model is from the Westinghouse historical collection now in the Henry Ford Museum, Dearborn, Mich.



1894 Earliest commercial Tesla motor developed by Westinghouse engineers is pictured above. Introduced about 1893, this two-phase 300-volt wound-rotor machine had resistances attached to ends of each rotor bar. Manually operated multiple-contact (32) rotary switch was used to short resistances when motor attained full operating speed.

1895 Patent drawing (No. 534,[illegible]) issued to Robert H. Hasslo [illegible]

1901 One of [illegible] built in 1901 [illegible] Minneapolis, and General Electric [illegible] and exported to Czechoslovakia [illegible] weighs about 70 lb. Although a few of these motors were built in 1901, the idea remained dormant for nearly 30 years. Then a number of AIEE papers reawakened interest in this important [illegible] [illegible] page 59



1879 Siemens & Halske built the first practical electric locomotive. Used 1-hp 150-volt series-wound dynamo, powered through third rail.

1880 Motor used for Edison's experimental locomotive at Menlo Park was based on high efficiency shunt-wound dynamo with low resistance armature and high resistance field

1887 Truck of first Sprague trolley. It used a 7½-hp 1200-[illegible] through rawhide pinions. Ends of motor frames were pivoted on axel.

Transportation

Siemens & Halske, Berlin, was the first to successfully apply a motor to electric traction. In 1879 he demonstrated a 3-hp locomotive pulling a string of cars [illegible] year later Edison built an experimental railway at Menlo Park and although his locomotive never was commercialized, it represented [illegible] next few years new street railways sprang up all over the country. The one installed in 1887 by [illegible] Sprague and [illegible] included him, notably Leo Daft, F. M. Bentley & W. H. Knight, Charles [illegible]

Siemens is also credited [illegible] the building of the first elevator (1880). The driving motor was mounted under the car. Several freight elevators were powered by [illegible] commercially successful [illegible] was the Otis worm gear machine introduced in 1889. First hydraulic oil elevator was built [illegible] electric elevator was built by Otis in 1900.

It [illegible] drives was made in two freighters by the Manitowoc Dry Dock [illegible] Within a few years such drives were applied to naval vessels.

1890 [illegible] Otis electric elevator installation, like its predecessor hydraulic types, it was operated by a hand rope in the car. Drive was by worm gear from a motor made by Rudolph Eickemeyer. Multivoltage speed control by Ward-Leonard system came two years later, when Otis Electric Company was organized to build motors and controls for elevators.

1915 The "New Mexico" was the first all-electric battleship [illegible] main drives by galley ranges. Its four 7000-hp propulsion motors were supplied from two 15,000-kw turbogenerators. Deck winches for naval vessels had been motorized in 1895, and turrets in 1896, using Ward-Leonard system of variable speed control. Battleship "Brooklyn"

[illegible] a three-speed d-c motor [illegible] patterned after Siemens, while generator is Gramme ring type. Speed changed by shunt resistance. In the [illegible]. In 1888 Daft motors of 3½-hp were used in [illegible] elevators, and a 1½-hp motor of the same type drove a 31x46 Cottrell printing press in 1886.

Industrial Applications & Mill Drives

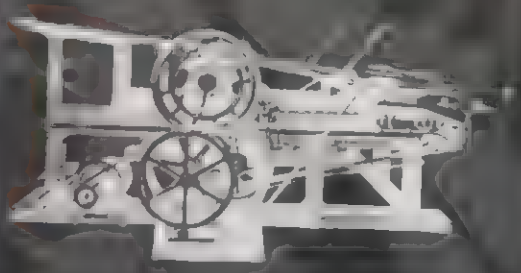
EARLIEST successful application of a motor was to a mine pump drive in South Wales, Great Britain, in 1882. It ran for five years before being replaced by a Siemens. At the Paris Electrical Exposition in 1881 motors were shown driving pumps, rock drills, elevators, railways, machine tools and sewing machines. In the first rush to apply motors, many applications fizzled. At Siemens, France, in 1879, plowing was done by electricity, anticipating the gasoline tractor. In 1883, a battery-operated Siemens motor weighing [illegible] lb was geared to a screw propeller for a balloon. Motor driven [illegible] and drills were made in the United [illegible] they were not commercially feasible. Mine hoists were successfully motorized in 1888. Cranes were even earlier applications.

On this page are shown some prototypes of more successful applications.

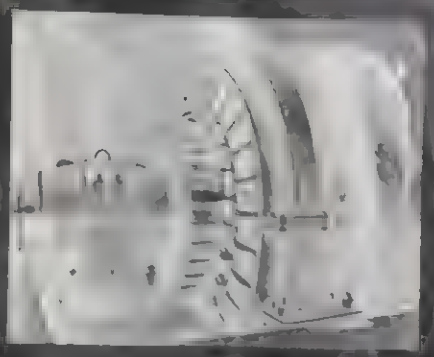
Sprague motors were applied to looms in 1888 but it was not until 1894 that textile mills were motorized on a large scale using group drives. In that year four [illegible] hp d-c induction motors were installed to drive all the machinery in the Columbia (S.C.) Mills. This represented a big advance, as the largest a-c motor made up to that time were 10 hp. Today, most looms are individually motor driven.

1898 Became commercial ice plants were operated by licensed engineers, the steam engine long held sway as a refrigeration compressor drive. Nevertheless, here is a reproduction of a small 4-hp "automatic" refrigerating machine driven by a bi-polar d-c motor offered by the De La Vergne Refrigerating Machine Co.

1900 An early dough mixer driven by a 25-30-hp Bullock d-c motor equipped with manual starter. Screen protection is typical of period.



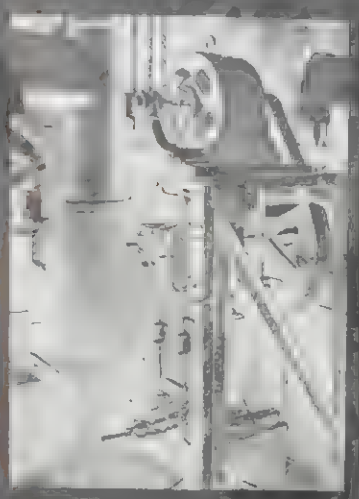
1895 Motors replaced steam engines for driving print[illegible] presses. [illegible] Machine press is shown with belted drive around 1895. By 1897 multi-pole slow-speed d-c motors were being built-in by the press builder [illegible]



1901 While electric motors had been used in steel mills for cranes and table drives in the 90's, the first rolling mill drive was not installed until 1905. Photo shows one of two Westinghouse 1500 hp d-c motors driving roll-out at Illinois Steel Works.

Machine Tools

1888 Early metal working plants driven by Sprague automatic motors. From an early advertisement (1888) of Sprague Electric Railway & Motor Co. in "The Electrical World"



1890 In 1890 Baldwin Locomotive Works motorized its entire erecting shop. Steel frames were constructed to support motors, such as this 4-kw Gibbs d-c motor seen driving a Bement-Miles radial drill

[illegible] applications of motors [illegible] machine tool drives were [illegible] change-over basis. A few [illegible] scattered instances of applications of Sprague motors to lathes were recorded in the Boston area in [illegible]

First instance on record [illegible] shop electrically equipped [illegible] was the Baldwin Locomotive Works in Philadelphia [illegible] 1890. Besides four [illegible] lines equipped with [illegible] motor drives included [illegible] and vertical boring mills [illegible] borers, multiple-spindle drills, a [illegible] drill, 90-in. lathe, three 84-[illegible] wheel lathes, four planers [illegible] largest with 36 ft table, a shaper and three locomotive [illegible] same size.

Most of the motors were [illegible] d-c shunt-wound machines [illegible] from 4 to 14 kw. One 20-hp [illegible] motor drove the bigger [illegible]

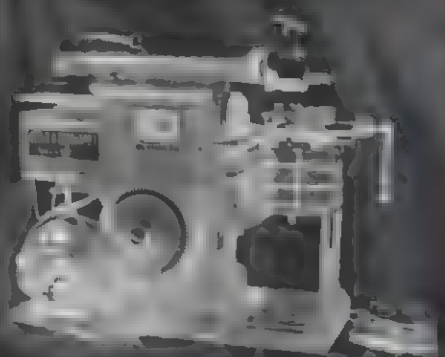
The Westinghouse plant at East Pittsburgh was probably the first to be driven by polyphase a-c motors (Tesla) at the turn of the century. General Electric was also among the first to adopt individual motor drives on machine tools in its own shops.

Published records of [illegible] motor drives go back [illegible] 1897. These included [illegible] 6½' drilling machines, drilling machines, horizontal boring machines and cold saws. Some motors were flange mounted [illegible] motor-driven [illegible]

practice became [illegible]

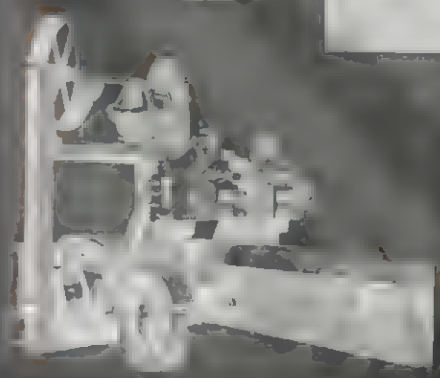
Multi-motored [illegible] were made almost 50 years [illegible] Newton cold saw [illegible] had five motors [illegible] totalling 207½-hp, including [illegible] main drive motor and [illegible] driving [illegible] rail. Air compressor for clutches was driven by [illegible] motor. Electric drives using variable voltage control systems and reversing [illegible] are now well established.

1896 Early portable drill for countersinking flush rivet holes in structural iron. Driven by Bullock Type B d-c motor of 5 to 10-hp, with magnetically latched manual starter mounted on top of frame. Coolant tank added weight to worker's thrust.



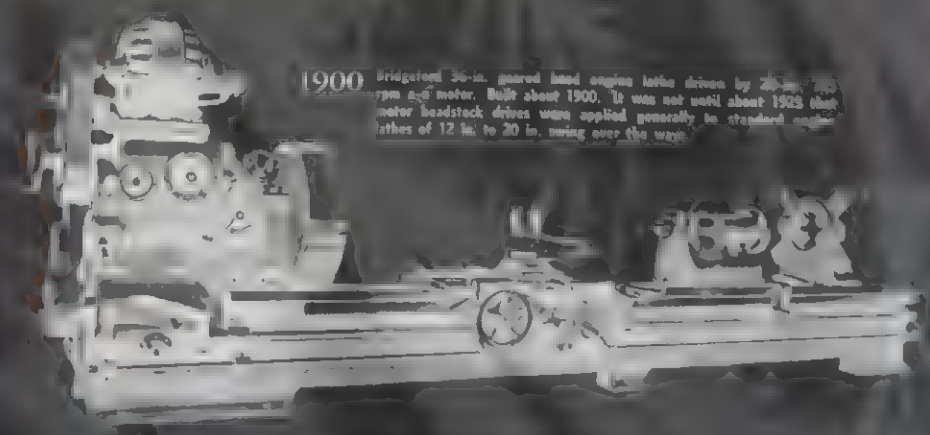
1897 [illegible] planer. Sprague d-c shunt-wound motor was mounted directly on ball gear. Cone pulley drive machines were [illegible] 1919 [illegible] machines until about 19[illegible]

[illegible] Because of the power requirements [illegible] machines for railroad shops were [illegible] motor built to be equipped with half-[illegible] shafts by the manufacturer. Typical [illegible] Niles 60-in. locomotive driving wheel lathe driven by 150-hp, 220-volt d-c, 500-1000 rpm G-E [illegible] motor. Prior to 1900, machines had been built using [illegible] type motor.



1900 Newton universal type cold saw cutting-off machine, driven by two Westinghouse Type C a-c crane motors covered by Tesla, Lamme, Westinghouse and Nelson patents. Drive motor 5-17-hp at 1080 rpm; index motor 3-5-hp at 800 rpm. Introduced in 1897, the Type C induction motor had a rotating squirrel cage secondary and gave high starting torque, with running slip of 3-4 per cent. It was also the first motor to use an autotransformer for starting.

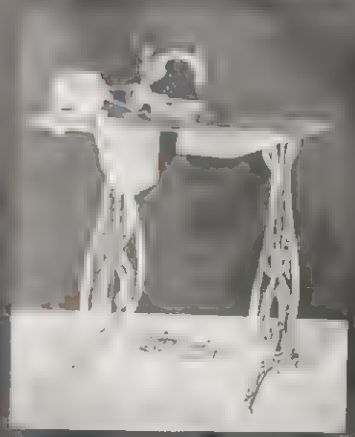
1906 First attempts of manufacturers to motorize planers led to motor geared to jackshaft which was belted to conventional forward and reverse pulleys. On larger planers, a separate motor was added to power rail elevation, and in one of the largest machines built by the Bement Works in 1907, five functional drive motors were built-in.



1900 Bridgeford 36-in. geared head engine lathe driven by 20-hp, [illegible] rpm a-c motor. Built about 1900. It was not until about 1925 that motor headstock drives were applied generally to standard engine lathes of 12 in. to 20 in. swing over the ways.

Domestic Appliances

1882 First home appliance to be motorized was the sewing machine in the above [illegible] from the Siemens Assortment of 1882 shown. "Double induction" motor right was the invention of William W. Griscom of the Electric Dynamic Company and was applied to both sewing machines and dental drill. Battery operated, this efficient little d-c motor took its name from the observation that if the field were left open and the armature energized, motor would rotate slowly; with field shorted, motor would speed up. Griscom surmised that currents of induction developed in the shorted field polarized the fixed magnet continuously. This 1/4-hp motor had an armature wound by a cylindrical electromagnet (Siemens ring winding), while the field consisted of a solid iron cylinder wound with two large ring coils.



1884 (Above) Variable-speed sewing machine motor designed by Philip Diehl in 1884 in which speed was controlled by varying the air gap. Base carries upper core and pole of field magnet attached to it, while lower pole piece is hinged at rear and is pulled away from armature by treadle. Armature is of the Siemens H-type. At right is a variation of Diehl variable air-gap motor only 5 in. high, operated off a battery.

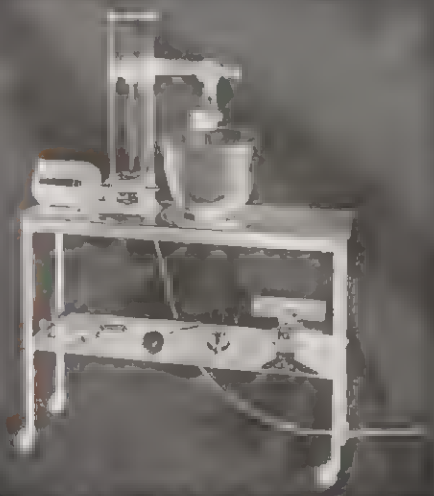
1886 At left is another early sewing machine driven by a circuit battery-operated motor made by Curtis, Crocker Wheeler Co.

1889 First ceiling fan patented in 1889 by Philip Diehl. Decorative frame carried grease lubricated ball thrust bearing which supported fan weight. Speed for 3-ft. blades, 200 rpm. Later, in 1895, Diehl patented a fan with blades arranged inside rotating-ring armature and field magnet outside [illegible]

Adaptation of motor drive to wash tub [illegible] 1908 above, using Emerson [illegible] 104-125 volt d-c motor. Early Thor washer in 1914 was driven by Cracker-Wheeler [illegible] 1720 rpm d-c shunt motor direct connected. **1914**

1905 [illegible] heated ironer was introduced in 1905, a direct motor driven ironer with either gas or electric heat was developed. Drive was from a Reynolds ⅛-hp, 1725-rpm anti-clockwise motor driving through grooved friction pulleys. In 1907 a belt driven model was offered that often was connected to the same utility motor used to drive the first electric clothes washing machines.

1908 Original Hoover vacuum cleaner introduced in 1908 and the latest Hoover Junior apartment house model brought out last fall. First model weighed 40 lb. and was driven by ⅛-hp motor at 1750 rpm, either a split-phase induction motor or a 4-pole universal type. Latest model weighs less than 14 lb. The influence of the industrial designer is plainly seen in new model.



1916 [illegible] placed on the market in 1916, was this Rece electric kitchen power unit. Driven by a Reynolds ⅛-hp, 1750 rpm motor it used the high speed shaft for cutlery grinding wheel, and vertically adjustable 92-rpm driving arm for mixing batter or driving conventional hand-type meat grinder, coffee mill or ice cream freezer. Table measures 35 by 10½ in.

1916 Pioneer Kelvinator refrigerator compressor was used to supply brine tank in ice-refrigerator cabinet. Model shown was produced from 1916 through 1920. Coils are cut away to show [illegible]-cylinder compressor driven by flat belt from [illegible] repulsion-induction motor. In 1924 Kelvinator introduced [illegible]-contained unit with motor-compressor in bottom of cabinet.

1927 [illegible] unit introduced in 1927, with the familiar General Electric monitor top cabinet seen above. Motor was ⅛-hp and box capacity was [illegible]

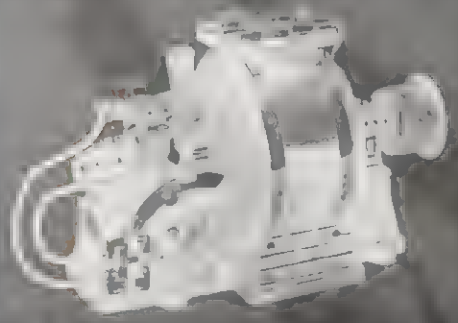
Many Early Motor Types

1886 Slow and strange were the forms of early a-c induction motors. This one was made by the Eddy Electric Mfg. Co. of Windsor, Conn. Eddy also made dynamo-electric machines for Mather Electric Co. Eddy motors were advertised as "the highest efficiency." An upside down version of the Eddy motor was built about the same time by Westinghouse.

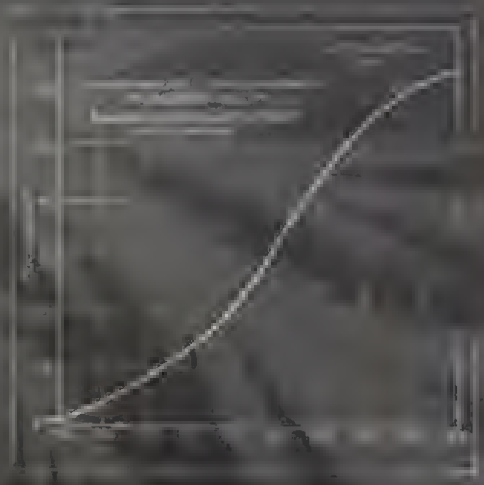
[illegible] motors had [illegible] were largely [illegible] materials. These [illegible] silicon steel for soft-iron laminations [illegible] adoption of pressure [illegible] copper for squirrel cage [illegible] explosion-proof construction [illegible] thermoplastic coated magnet [illegible] insulating materials also welded steel frames [illegible] although the latter is still [illegible]

First motor standards were released in 1915 by [illegible] Power Club, predecessor of the National Electrical Manufacturers [illegible] NEMA, motor and generator standards [illegible] book.

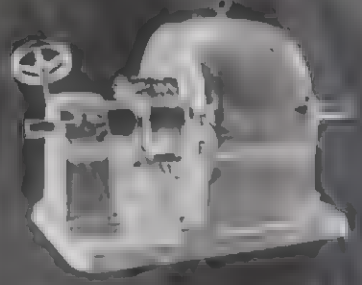
In 1886 there were [illegible] sewing machines. Accor[illegible]



189[illegible] This 1 hp Emerson motor is another early single-phase repulsion-start, induction run motor (see p. 78) with manual brush shifting device. When hand lever was moved to "start" position contacted commutator. After motor reached normal speed moving lever to extreme right cammed brushes off commutator.



1898 Pole pieces of Stow variable-speed shunt-wound [illegible] vided with plunger cores adjusted [illegible] d-c motor were made hollow and pro[illegible] [illegible]ically with respect to armature by means of handwheel and screw. With drawing plunger increased air gap and reluctance and hence speed of rotor [illegible]



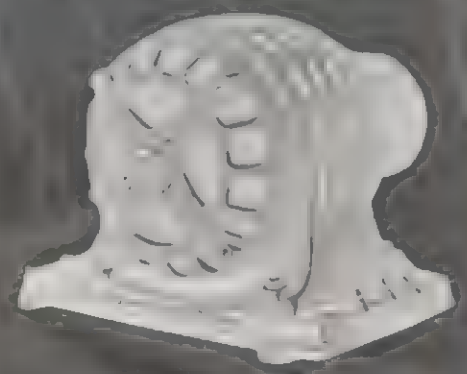
1906 Another type of variable-speed d-c motor—in this 10-hp, 900-1200 rpm Robinson motor, stepless speed adjustment was obtained by shifting armature axially with respect to center-line of field poles.

motor horsepower [illegible] the share made the product of [illegible] horsepower per industrial worker. [illegible] average home [illegible] motors [illegible] drudgery of household chores. [illegible] 1948, [illegible] 44,693 integral horsepower motors were produced by [illegible] companies, plus 15,269,523 fractional horsepower types.

Electric Motor Power Installed in Various Industry Groups, Driving Production Machinery*

Industry	Electric Motors Aggregate Hp
Food and kindred products	4,652,[illegible]
Tobacco manufactures	[illegible]
Textile-mill products and other fiber manufactures	3,084,229
Apparel and other finished products made [illegible] fabrics and similar materials	3,41,80[illegible]
Lumber and timber basic products	1,309,12[illegible]
Furniture and finished lumber products	[illegible]
Paper and allied products	[illegible]
Printing, publishing, and allied industries	763,903
Chemicals and allied products	2,932,044
Products of petroleum and coal	[illegible]
Rubber products	[illegible]
Leather and leather products	[illegible]
Stone, clay, and glass products	2,991,046
Primary metals and their products	[illegible]
Nonferrous metals and their products	1,553,990
Electrical machinery	1,016,87[illegible]
Machinery (except electrical)	2,746,416
Automobiles and automobile equipment	2,231,365
Transportation equipment except automobiles	826,26[illegible]
Miscellaneous industries	412,[illegible]
Total	[illegible]

Paragon d-c bipolar motor with barrel-type [illegible] Rated at ½ hp, 110 volts. Now in Edison Institute

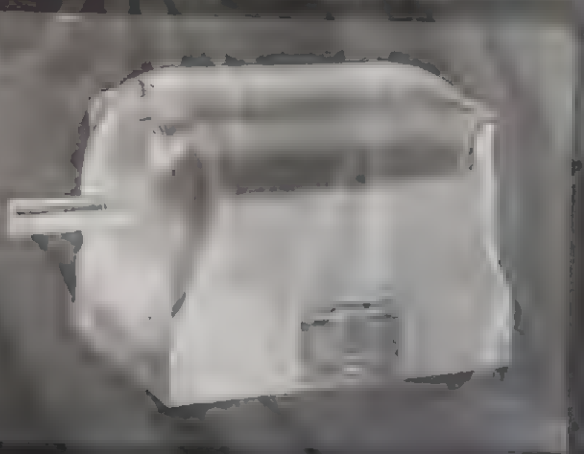


1908 Fairbanks, Morse in 1908 introduced a complete line of ball-bearing induction motors ranging up to 60 hp at 1750 rpm. Electro Dynamic Works had applied ball bearings to a few d-c motors the year before. Winding had cast copper end rings.

. . . And Some Late Models

Axial air gap motor introduced by Fairbanks-Morse in 1948. Rotor with skewed cast copper windings is same diameter as stator

Sanitary motor made by Louis Allis Co. [illegible] represents ultimate in "streamlined" design [illegible] and permits hosing down when used in drive machinery in dairies and food processing plants. Base is entirely closed



Refinements in Motor Design

1910

1913

1[illegible]

Cast Iron Era of Motor Frames

These three Robbins & Myers motors are all 5-hp, 60-cycle polyphase induction motors, the first two at 1750 rpm, the last at 1200 rpm.

Today's motor of the same frame size is approximately 40 lb lighter due to use of steel for frames and less bulky windings.

Evolution of Motors for Deep Well Pumps

FORTY YEARS AGO deep well pumping was stimulated with the advent of high-speed turbine centrifugal pumps designed for installation in drilled wells, replacing the old fashioned plunger pump. To develop arid ranch lands in Texas and California water had to be lifted several hundred feet and in huge volumes. Turbine pumps required high speed motors capable of operating uninterruptedly in torrid temperatures. The first motor [illegible] tions were the standard horizontal types, belted to the pump head. Then the motors were turned up on end with a flexible coupling connection to the pump shaft. Finally [illegible] design was adopted, permitting the motor to [illegible] and the thrust bearing relocated in the motor.

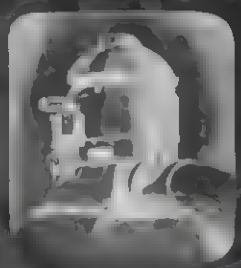
Little attempt was made to integrate the motors with the [illegible] until around 1930. At that time de[illegible] over with protecting canopy by J. S. Mo[illegible] ive to turbine pump manufacturers to imp[illegible] lines of their pump heads to correlate w[illegible] Motors ranging from 5 to 500 hp are being used [illegible] well pumping.

Over-all efficiency of deep well pumps and motors have been increased to 80 per cent or better by elimination of [illegible] improved electrical design, precision machining, use of ball bearings and [illegible]

1908 With advent of deep well pumping, original U.S. motors were open horizontal type, with quarter turn belt drive.

1916 Modified direct-connected motors with feet or base were introduced to eliminate belts.

1922 Introduction of hollow-shaft eliminated necessity of flexible coupling. Thrust bearing at top.



1930 Streamlining and protection of motor against weather was introduced in the early thirties.

1949 Final development of the "totally enclosed" type has added the ultimate in streamlining.

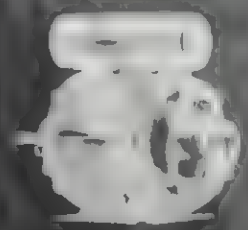
1914 Burke 25-hp. [illegible] phase induction [illegible] shows cast iron frame construction typical of this period.

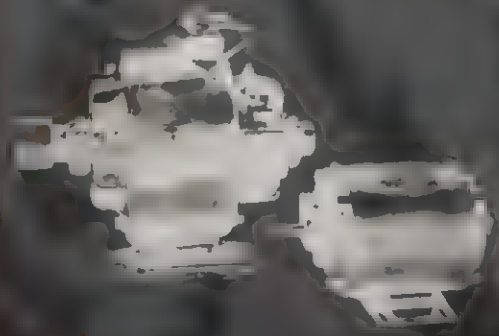
1919 Typical of the swing to welded steel frame design in the period from 1919 to 1936 is this Burke 5-hp. induction motor.

1949 Clearcut design of the modern motor is typified in the welded steel frame construction of this Burke NEMA 284 frame size motor.

Size and [illegible] motors. The vertical [illegible] motors [illegible]

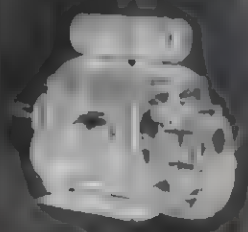
When first built, the condenser for a single-phase capacitor motor was as big as the motor (see p. 7). After these motors were commercially rejuvenated in the early 30's, rapid progress was made in reducing the capacitor size. Pictures at right show results of four years of design [illegible] in General Electric [illegible] motor for 24 inch [illegible]

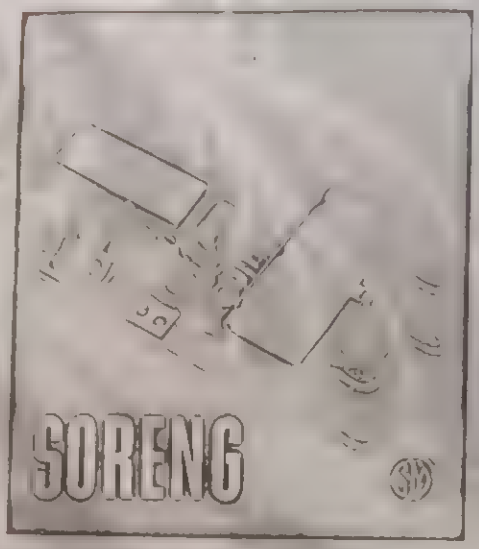




1896 vs 1948

These two motors are both [illegible] phase motors [illegible] operations [illegible] Pittsburgh [illegible] Westinghouse [illegible] 7¼ in. high, weight 22 lb.





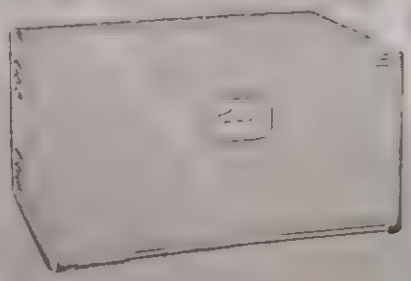
Solenoid-operated switch

Controlling two separate but synchronized electrical circuits, this new SORENG Solenoid-Operated Switch has many applications for clothes dryers and other household appliances—in addition to other applications of a wide variety.

It is a double-pole, single throw, "normally open" switch with double-break contacts in each circuit. With the powerful SORENG TT type solenoid as the "make-and-break" actuating device, high contact pressures can be maintained in the switch. In fact, this solenoid-operated switch has been tested with 25 amperes at 250 volts A.C., and after 100,000 actuations was in perfect working condition.

Designed to make and break two circuits at the same time, the switch is available in the "normally open" type, and with minor changes can be supplied in the "normally closed" type. Additional information will be furnished if desired. When requesting, refer to Department M95.

to the average frequency in percentage, with three scale ranges 0.3, 1.0 and 3.0 per cent. It responds to rates from 0 to 200 cycles. Wow components are indicated



New analyzer designed by Amplifier Corp. of America, New York, measures flutter, wow and drift to standards set up by SMPE.

by the amplitude of pointer swing. Drift is observed by gradual sliding up and down the scale of combined flutter and wow reading. Hum, noise switching surges and other transients have no effect on readings. □ □ □

History of Development and Application of the Electric Motor

See pages 76 through 89

Picture credits and source data

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1831—Faraday's model. ELECTRICAL MANUFACTURING
1831—Prof. Henry's machine. Smithsonian Institution
1837—Davenport model. Smithsonian Institution
1850—Page's motor. Smithsonian Institution

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1860—Pacinotti machine. "The Electric Motor and Its Application," T. C. Martin, Joseph Wetzler, 1895, W. J. Johnson Co.
1870—Gramme machine. General Electric Co.
1872—Drum winding. "Menlo Park Reminiscences," Francis Jehl, Edison Institute
1892—Edison General Electric motor. "The Elec
1884—Sprague motor—Edison Institute

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1876—Plating generator—Hanson-Van Winkle-Munning Co.
1885—Brush motor—"The Electric Motor and Its Applications," Martin and Wetzler
1892—Edison General Electric motor. "The Electric Motor," Martin and Wetzler
1878—Thomson generator—General Electric Co.
1887—Thomson repulsion motor. General Electric Sketches from "Alternate Current Commutator Motors," W. A. Flynn, 1906

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1888—Tesla's model. "Inventions, Researches of Nikola Tesla," T. C. Martin
1892—Tesla motor. Edison Institute
1895—Induction motor. Westinghouse Electric Corp.
1895—Shaded pole motor. Patent drawing
1901—Capacitor motor. General Electric Co.

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1879—Siemen's locomotive. "Menlo Park Reminiscences," Jehl
1880—Edison locomotive. Edison Institute
1887—Sprague trolley. Julian K. Sprague
1890—Otis elevator. Otis Elevator Co.
1915—"New Mexico." New York Public Library

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1884—Sturtevant fan. "The Electric Motor," Martin and Wetzler
1894—Ice machine. De La Vergne catalog
1895—Printing press. Miehle Printing Press & Mfg. Co.
1900—Dough mixer. Allis Chalmers Mfg. Co.
1905—Rolling mill drive. Westinghouse Electric Corp.

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1888—Planer. Advertisement of Sprague Electric Railway & Motor Co.
1890—Baldwin shops. American Machinist, July 14, 1898
1896—Portable drill. Allis Chalmers Mfg. Co.
1897—Shaper. Gould & Eberhardt

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1910—Cold saw. Consolidated Machine Tool Corp.
Type C motor. Westinghouse Electric Corp.
1910—Planer. Niles Tool Works Co.
1900. Lathe. Consolidated Machine Tool Corp.

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1885—Sewing machine. Crocker-Wheeler Electric Mfg. Co.
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Thor washer. Crocker Wheeler Electric Mfg. Co.

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1916—Refrigerator compressor. Kelvinator Div.
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1898—Stow motor. Stow Mfg. Co.
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1906—Fairbanks, Morse & Co.
Late models. Fairbanks, Morse & Co., The Louis Allis Co.

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1908-49. Deep well pumps. U. S. Electrical Motors, Inc.

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1914-1919. Induction motors. Burke Electric Co.
1898 to 1944—Size and rating comparison. General Electric Co.
1933 to 1938. Capacitor motors. General Electric
1896 to 1948. Single phase motors. Wagner Electric Corp.

MACHINE CALCULATING

MAY, 19[illegible]

[illegible] of Development [illegible] Application [illegible] ELECTRIC [illegible] TOR[illegible]

[illegible] total tribute to [illegible] one [illegible] [illegible] others

AED
6


Nikola Tesla, Esq.,
HOTEL BLACKSTONE,
CHICAGO, ILL.

by the world's brightest minds, and the ends which they have in view are generally pretty clearly foreseen. Accidental discoveries will often be made while in pursuit of a particular idea or invention, and these may be set down as among the fortuitous inventions of the presentage.

Prior to the present century of material progress and invention the great discoveries were nearly all the products of chance observation. The story of the boy watching the steam forcing up the lid of a cooking vessel, which suggested to him the power of steam, and the account of Newton establishing the existence of gravitation through the falling of an apple, are familiar popular illustrations of how the great discoveries of the past were made in an accidental manner. Faraday, the great scientist and inventor, himself confessed that the fortuitous discovery made by rubbing a piece of amber released "an invisible agent which has done for mankind far more wonderful things than the genie of Aladdin did or could have done for him." The discoverer of gunpowder was as much startled by what he had done as the world which soon heard of it. A child actually first discovered the magnifying power of two lenses placed at certain distances apart, and its father, being an optician, took the suggestion up and produced the first telescope out of a tube of pasteboard. The manufacture of leaden shot by dropping molten lead from a high altitude was discovered by chance, and Arkwright obtained his idea of spinning by rollers by chance observation.

The list of ancient discoveries and inventions produced fortuitously could be extended indefinitely, and even those of modern times produced accidentally would make a formidable list. But most of these latter were also directly attributable to the genius and hard work of the inventors. Thus Professor Roëntgen would

never have discovered his marvelous X-rays had he not been experimenting in a dark room with a Crooke's vacuum tube. Neither would Edison have invented the phonograph had he not experimented over and over again with the telephone, which one day accidentally set him thinking when the vibration of his voice had sent the fine steel point of the mouthpiece into his finger.

The modern inventor and discoverer of new laws of the material and mechanical world is a man who pursues his profession with the same steadfast purpose that a physician or lawyer devotes to his calling. The day of the purely fortuitous invention has mostly passed. Even the inventor of the small things which amuse or supply a long felt want is usually one who has devoted years to the study and experiment of certain lines of work. The inventor of the simple puzzle called "pigs in clover," which had a remarkable run and netted a small fortune to its discoverer, spent nearly a lifetime in making popular games and puzzles before he hit upon the thing that made his reputation. He was a genius in this particular line, and he applied himself assiduously to the invention of new games and toys. Sam Lloyd, according to his own account, studied mechanics in all its branches, and, while gifted with certain ingenuity which enabled him to see patentable ideas, he pursued his studies as steadily and persistently as if he were working out a mathematical demonstration.

Modern inventing has become a profitable and lucrative profession for those who have the inventive faculty and the willingness to pursue it as others do a business or practice. The world owes much to the inventors of the age, but if our life and method of living have been revolutionized and improved by their ideas their rewards have been ample. The successful owner of a popular patent receives remunerations that are

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C O P Y.

Tesla Laboratory.

Long Island, N. Y.

New York, June 24, 1908.

Edward W. Whitaker, Esq.,
Patent Attorney,
Washington, D. C.

My dear Sir:--

I regret very much that your communication containing the enclosed clippings has been overlocked. Permit me, at this late date, to thank you for the expression of your appreciation.

The efforts of Loomis in wireless telegraphy may have been the first in this country, but not abroad. The records show many anticipations in France and England.

The devices used until quite recently were, however, for all practical purposes, worthless. Neither Marconi or anybody else has succeeded in transmitting a message to any appreciable distance without the use of my apparatus. Last October the Hertzian appliances were abandoned and my apparatus substituted and the messages were, of course, easily transmitted. There is nothing particularly meritorious in the attempt, however, for I have already in 1899, as you may see from my patent of April 18, 1905, passed a heavy current around the earth (over 100 amperes) and excited the planet resonantly.

As a matter of fact, to transmit wireless messages, telegraphic or telephonic, under practical conditions and to appreciable distances, five of my discoveries are necessary:

First, my method of oscillatory conversion by means of condensers; second, the so-called "Tesla transformer"; third, my apparatus for the transmission of energy without wire, comprising grounded, resonant circuits; fourth, my methods and apparatus for individualizing signals, and, fifth, my discovery of the stationary waves.

Believe me,

Very truly yours,

N. Tesla.